



## SEQUENCE LISTING

<110> Van Rooijen, Gijs  
Deckers, Harm  
Heifetz, Peter Bernard  
Briggs, Steven  
Dalmia, Bipin Kumar  
Del Val, Greg  
Zaplachinski, Steve  
Moloney, Maurice

<120> METHODS FOR THE PRODUCTION OF MULTIMERIC PROTEINS, AND RELATED COMPOSITIONS

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<141> 2001-12-19

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ggc cca gcg gca cac acg gcg gcg att tac gca gct agg gct gaa ctt 96
Gly Pro Ala Ala His Thr Ala Ala Ile Tyr Ala Ala Arg Ala Glu Leu
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aaa cct ctt ctc ttc gaa gga tgg atg gct aac gac atc gct ccc ggt 144
Lys Pro Leu Leu Phe Glu Gly Trp Met Ala Asn Asp Ile Ala Pro Gly
35 40 45

ggt caa cta aca acc acc acc gac gtc gag aat ttc ccc gga ttt cca 192
Gly Gln Leu Thr Thr Thr Thr Asp Val Glu Asn Phe Pro Gly Phe Pro
50 55 60

gaa ggt att ctc gga gta gag ctc act gac aaa ttc cgt aaa caa tcg 240
Glu Gly Ile Leu Gly Val Glu Leu Thr Asp Lys Phe Arg Lys Gln Ser
65 70 75 80

gag cga ttc ggt act acg ata ttt aca gag acg gtg acg aaa gtc gat 288
Glu Arg Phe Gly Thr Thr Ile Phe Thr Glu Thr Val Thr Lys Val Asp
85 90 95

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Phe Ser Ser Lys Pro Phe Lys Leu Phe Thr Asp Ser Lys Ala Ile Leu
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ttc gtt gga tct ggt gaa ggt tct gga ggt ttc tgg aac cgt gga atc 432
Phe Val Gly Ser Gly Glu Gly Ser Gly Gly Phe Trp Asn Arg Gly Ile
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 Gly Gln Leu Thr Thr Thr Thr Asp Val Glu Asn Phe Pro Gly Phe Pro  
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 Glu Gly Ile Leu Gly Val Glu Leu Thr Asp Lys Phe Arg Lys Gln Ser  
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 Glu Arg Phe Gly Thr Thr Ile Phe Thr Glu Thr Val Thr Lys Val Asp  
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 100 105 110  
 Ala Asp Ala Val Ile Leu Ala Thr Gly Ala Val Ala Lys Arg Leu Ser  
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<223> Chimeric: Arabidopsis thioredoxin h gene derived from Arabidopsis thaliana fused with the phaseolin promotor and phaseolin terminator derived from Phaseolus vulgaris

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Met

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atg cca acc ttc atg ttt ttg aag gaa ggg aag att ttg gac aaa gtt 1845
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gtt gga gcc aag aaa gat gag ctt cag tct acc att gcc aaa cac ttg 1893
Val Gly Ala Lys Lys Asp Glu Leu Gln Ser Thr Ile Ala Lys His Leu
          100                      105                      110

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gct taa gcttaataag tatgaactaa aatgcatgta ggtgtaagag ctcatggaga 1949
Ala *

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gcatggaata ttgtatccga ccatgtaaca gtataataac tgagctccat ctcacttctt 2009
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tatgataaat ttccctcttat tattataaat catctgaatc gtgacgggctt atggaatgct 2129
tcaaatagta caaaaacaaa tgtgtactat aagactttct aaacaattct aacttttagca 2189
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<210> 15  
 <211> 114  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Arabidopsis thaliana

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Val Asp Phe Thr Ala Ser Trp Cys Gly Pro Cys Arg Phe Ile Ala Pro
35        40        45
Phe Phe Ala Asp Leu Ala Lys Lys Leu Pro Asn Val Leu Phe Leu Lys
50        55        60
Val Asp Thr Asp Glu Leu Lys Ser Val Ala Ser Asp Trp Ala Ile Gln
65        70        75        80
Ala Met Pro Thr Phe Met Phe Leu Lys Glu Gly Lys Ile Leu Asp Lys
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100       105       110
Leu Ala

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<210> 16  
 <211> 3888  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> Chimeric: Arabidopsis oleosin gene derived from Arabidopsis thaliana fused with the phaseolin promotor and phaseolin terminator derived from Phaseolus vulgaris

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 <222> (1555)...(1907)

<221> CDS  
 <222> (2148)...(2659)

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tatccctaca	aatttattat	ttgttaaaca	ttttcaaacc	gcataaaatt	ttatgaagtc	240
ccgtctatct	ttaatgtagt	ctaacatttt	catattgaaa	tatataattt	acttaatttt	300
agcggttggt	gaaagcataa	tgatttatct	ttattcttct	tcatataaat	gtttaatat	360
caatataaac	aaattcttta	ccttaagaag	gatttcccat	tttatatttt	aaaaatata	420
ttatcaaata	tttttcaacc	acgtaaatct	cataataata	agttgtttca	aaagtaataa	480
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cccactctca	cccacacaca	aacacattgc	ctttttcttc	atcatcacca	caaccacctg	1320
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Met  
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Ala	Asp	Thr	Ala	Arg	Gly	Thr	His	His	Asp	Ile	Ile	Gly	Arg	Asp	Gln	
			5					10					15			

tac	ccg	atg	atg	ggc	cga	gac	cga	gac	cag	tac	cag	atg	tcc	gga	cga	1653
Tyr	Pro	Met	Met	Gly	Arg	Asp	Arg	Asp	Gln	Tyr	Gln	Met	Ser	Gly	Arg	
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gga	tct	gac	tac	tcc	aag	tct	agg	cag	att	gct	aaa	gct	gca	act	gct	1701
Gly	Ser	Asp	Tyr	Ser	Lys	Ser	Arg	Gln	Ile	Ala	Lys	Ala	Ala	Thr	Ala	
	35					40					45					

gtc	aca	gct	ggt	ggt	tcc	ctc	ctt	ggt	ctc	tcc	agc	ctt	acc	ctt	ggt	1749
Val	Thr	Ala	Gly	Gly	Ser	Leu	Leu	Val	Leu	Ser	Ser	Leu	Thr	Leu	Val	
	50				55				60						65	

gga	act	gtc	ata	gct	ttg	act	ggt	gca	aca	cct	ctg	ctc	ggt	atc	ttc	1797
Gly	Thr	Val	Ile	Ala	Leu	Thr	Val	Ala	Thr	Pro	Leu	Leu	Val	Ile	Phe	
				70				75						80		

agc	cca	atc	ctt	gtc	ccg	gct	ctc	atc	aca	ggt	gca	ctc	ctc	atc	acc	1845
Ser	Pro	Ile	Leu	Val	Pro	Ala	Leu	Ile	Thr	Val	Ala	Leu	Leu	Ile	Thr	
			85				90						95			

ggt	ttt	ctt	tcc	tct	gga	ggg	ttt	ggc	att	gcc	gct	ata	acc	ggt	ttc	1893
Gly	Phe	Leu	Ser	Ser	Gly	Gly	Phe	Gly	Ile	Ala	Ala	Ile	Thr	Val	Phe	
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tct	tgg	att	tac	aa	gtaagcacac	atttatcatc	ttacttcata	attttgtgca	1947
Ser	Trp	Ile	Tyr	Lys					
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			Tyr	Ala	Thr	Gly	Glu	His	Pro	Gln	Gly	Ser	
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His Asp Arg Asp Arg Thr Arg Gly Gly Gln His Thr Thr Met Ala Ser	
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gaa gaa gga caa gtg atc gcc tgc cac acc gtt gag aca tgg aac gag	2370
Glu Glu Gly Gln Val Ile Ala Cys His Thr Val Glu Thr Trp Asn Glu	
180 185 190	
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225 230 235 240	
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Asp Glu Leu Lys Ser Val Ala Ser Asp Trp Ala Ile Gln Ala Met Pro	
245 250 255	
acc ttc atg ttt ttg aag gaa ggg aag att ttg gac aaa gtt gtt gga	2610
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260 265 270	
gcc aag aaa gat gag ctt cag tct acc att gcc aaa cac ttg gct taa	2658
Ala Lys Lys Asp Glu Leu Gln Ser Thr Ile Ala Lys His Leu Ala *	
275 280 285	
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 35 40 45  
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 50 55 60  
 Val Gly Thr Val Ile Ala Leu Thr Val Ala Thr Pro Leu Leu Val Ile  
 65 70 75 80  
 Phe Ser Pro Ile Leu Val Pro Ala Leu Ile Thr Val Ala Leu Leu Ile  
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 35 40 45  
 Arg Gly Gly Gln His Thr Thr Met Ala Ser Glu Glu Gly Gln Val Ile  
 50 55 60  
 Ala Cys His Thr Val Glu Thr Trp Asn Glu Gln Leu Gln Lys Ala Asn  
 65 70 75 80  
 Glu Ser Lys Thr Leu Val Val Val Asp Phe Thr Ala Ser Trp Cys Gly  
 85 90 95  
 Pro Cys Arg Phe Ile Ala Pro Phe Phe Ala Asp Leu Ala Lys Lys Leu  
 100 105 110  
 Pro Asn Val Leu Phe Leu Lys Val Asp Thr Asp Glu Leu Lys Ser Val  
 115 120 125  
 Ala Ser Asp Trp Ala Ile Gln Ala Met Pro Thr Phe Met Phe Leu Lys  
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 <223> Chimeric: Arabidopsis thioredoxin h gene and oleosin gene derived from  
 Arabidopsis thaliana fused with phaseolin promotor and phaseolin terminator  
 derived from Phaseolus vulgaris

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Met  
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aac	gag	cag	ctt	cag	aag	gct	aat	gaa	tcc	aaa	act	ctt	gtg	gtg	gtt	1653
Asn	Glu	Gln	Leu	Gln	Lys	Ala	Asn	Glu	Ser	Lys	Thr	Leu	Val	Val	Val	
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gat	ttc	acg	gct	tct	tgg	tgt	gga	cca	tgt	cgt	ttc	atc	gct	cca	ttc	1701
Asp	Phe	Thr	Ala	Ser	Trp	Cys	Gly	Pro	Cys	Arg	Phe	Ile	Ala	Pro	Phe	
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Phe	Ala	Asp	Leu	Ala	Lys	Lys	Leu	Pro	Asn	Val	Leu	Phe	Leu	Lys	Val	
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Asp	Thr	Asp	Glu	Leu	Lys	Ser	Val	Ala	Ser	Asp	Trp	Ala	Ile	Gln	Ala	
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Met	Pro	Thr	Phe	Met	Phe	Leu	Lys	Glu	Gly	Lys	Ile	Leu	Asp	Lys	Val	
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		100					105					110				

gct	atg	gcg	gat	aca	gct	aga	gga	acc	cat	cac	gat	atc	atc	ggc	aga	1941
Ala	Met	Ala	Asp	Thr	Ala	Arg	Gly	Thr	His	His	Asp	Ile	Ile	Gly	Arg	
	115					120					125					

gac	cag	tac	ccg	atg	atg	ggc	cga	gac	cga	gac	cag	tac	cag	atg	tcc	1989
Asp	Gln	Tyr	Pro	Met	Met	Gly	Arg	Asp	Arg	Asp	Gln	Tyr	Gln	Met	Ser	
	130				135				140					145		

gga	cga	gga	tct	gac	tac	tcc	aag	tct	agg	cag	att	gct	aaa	gct	gca	2037
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150										155					160					
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Thr Ala Val Thr Ala Gly Gly Ser Leu Leu Val Leu Ser Ser Leu Thr																				
165 170 175																				
ctt gtt gga act gtc ata gct ttg act gtt gca aca cct ctg ctc gtt	2133																			
Leu Val Gly Thr Val Ile Ala Leu Thr Val Ala Thr Pro Leu Leu Val																				
180 185 190																				
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Ile Phe Ser Pro Ile Leu Val Pro Ala Leu Ile Thr Val Ala Leu Leu																				
195 200 205																				
atc acc ggt ttt ctt tcc tct gga ggg ttt ggc att gcc gct ata acc	2229																			
Ile Thr Gly Phe Leu Ser Ser Gly Gly Phe Gly Ile Ala Ala Ile Thr																				
210 215 220 225																				
gtt ttc tct tgg att tac aa gtaagcacac atttatcatc ttacttcata	2279																			
Val Phe Ser Trp Ile Tyr Lys																				
230																				
attttgtgca atatgtgcat gcatgtgttg agccagtagc tttggatcaa tttttttggt	2339																			
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acgaaatttg acctagctag cttgaatgtg tctgtgtata tcatctatat aggtaaaatg	2459																			
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Tyr Ala Thr Gly Glu His Pro																				
235																				
cag gga tca gac aag ttg gac agt gca agg atg aag ttg gga agc aaa	2559																			
Gln Gly Ser Asp Lys Leu Asp Ser Ala Arg Met Lys Leu Gly Ser Lys																				
240 245 250 255																				
gct cag gat ctg aaa gac aga gct cag tac tac gga cag caa cat act	2607																			
Ala Gln Asp Leu Lys Asp Arg Ala Gln Tyr Tyr Gly Gln Gln His Thr																				
260 265 270																				
ggt ggg gaa cat gac cgt gac cgt act cgt ggt ggc cag cac act act	2655																			
Gly Gly Glu His Asp Arg Asp Arg Thr Arg Gly Gly Gln His Thr Thr																				
275 280 285																				
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 <212> PRT  
 <213> *Arabidopsis thaliana*

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 35 40 45  
 Phe Phe Ala Asp Leu Ala Lys Lys Leu Pro Asn Val Leu Phe Leu Lys  
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 Val Asp Thr Asp Glu Leu Lys Ser Val Ala Ser Asp Trp Ala Ile Gln  
 65 70 75 80  
 Ala Met Pro Thr Phe Met Phe Leu Lys Glu Gly Lys Ile Leu Asp Lys  
 85 90 95  
 Val Val Gly Ala Lys Lys Asp Glu Leu Gln Ser Thr Ile Ala Lys His  
 100 105 110  
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 115 120 125  
 Arg Asp Gln Tyr Pro Met Met Gly Arg Asp Arg Asp Gln Tyr Gln Met  
 130 135 140  
 Ser Gly Arg Gly Ser Asp Tyr Ser Lys Ser Arg Gln Ile Ala Lys Ala  
 145 150 155 160  
 Ala Thr Ala Val Thr Ala Gly Gly Ser Leu Leu Val Leu Ser Ser Leu  
 165 170 175  
 Thr Leu Val Gly Thr Val Ile Ala Leu Thr Val Ala Thr Pro Leu Leu  
 180 185 190  
 Val Ile Phe Ser Pro Ile Leu Val Pro Ala Leu Ile Thr Val Ala Leu  
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 210 215 220  
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<210> 21  
 <211> 55  
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 <213> Artificial Sequence

<220>  
 <223> *Arabidopsis thaliana*

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<210> 22  
 <211> 3787  
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<220>  
 <223> Chimeric: *Arabidopsis* thioredoxin-reductase gene and oleosin gene derived from *Arabidopsis thaliana* fused with phaseolin promotor and phaseolin terminator derived from *Phaseolus vulgaris*

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 <222> (1555) ... (2556)

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 tatccctaca aattttattat ttgttaaaca ttttcaaacc gcataaaatt ttatgaagtc 240  
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 aaatttcacc aaacaatcat ttgtggtatt tctgaagcaa gtcattgtat gcaaaattct 660  
 ataattccca tttgacacta cggaagtaac tgaagatctg cttttacatg cgagacacat 720  
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 aat ggt ctc gaa act cac aac aca agg ctc tgt atc gta gga agt ggc 1605  
 Asn Gly Leu Glu Thr His Asn Thr Arg Leu Cys Ile Val Gly Ser Gly  
 5 10 15  
 cca gcg gca cac acg gcg gcg att tac gca gct agg gct gaa ctt aaa 1653  
 Pro Ala Ala His Thr Ala Ala Ile Tyr Ala Ala Arg Ala Glu Leu Lys  
 20 25 30  
 cct ctt ctc ttc gaa gga tgg atg gct aac gac atc gct ccc ggt ggt 1701  
 Pro Leu Leu Phe Glu Gly Trp Met Ala Asn Asp Ile Ala Pro Gly Gly  
 35 40 45  
 caa cta aca acc acc acc gac gtc gag aat ttc ccc gga ttt cca gaa 1749  
 Gln Leu Thr Thr Thr Thr Asp Val Glu Asn Phe Pro Gly Phe Pro Glu  
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 Gly Ile Leu Gly Val Glu Leu Thr Asp Lys Phe Arg Lys Gln Ser Glu  
 70 75 80  
 cga ttc ggt act acg ata ttt aca gag acg gtg acg aaa gtc gat ttc 1845  
 Arg Phe Gly Thr Thr Ile Phe Thr Glu Thr Val Thr Lys Val Asp Phe  
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 tct tcg aaa ccg ttt aag cta ttc aca gat tca aaa gcc att ctc gct 1893  
 Ser Ser Lys Pro Phe Lys Leu Phe Thr Asp Ser Lys Ala Ile Leu Ala  
 100 105 110  
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 Asp Ala Val Ile Leu Ala Thr Gly Ala Val Ala Lys Arg Leu Ser Phe  
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 Val Gly Ser Gly Glu Gly Ser Gly Gly Phe Trp Asn Arg Gly Ile Ser

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ctt gcg gtg atc ggt gga ggc gat tca gca atg gaa gaa gca aac ttt Leu Ala Val Ile Gly Gly Gly Asp Ser Ala Met Glu Glu Ala Asn Phe	165	170	175	2085
ctt aca aaa tat gga tct aaa gtg tat ata atc cat agg aga gat gct Leu Thr Lys Tyr Gly Ser Lys Val Tyr Ile Ile His Arg Arg Asp Ala	180	185	190	2133
ttt aga gcg tct aag att atg cag cag cga gct ttg tct aat cct aag Phe Arg Ala Ser Lys Ile Met Gln Gln Arg Ala Leu Ser Asn Pro Lys	195	200	205	2181
att gat gtg att tgg aac tcg tct gtt gtg gaa gct tat gga gat gga Ile Asp Val Ile Trp Asn Ser Ser Val Val Glu Ala Tyr Gly Asp Gly	210	215	220	2229
gaa aga gat gtg ctt gga gga ttg aaa gtg aag aat gtg gtt acc gga Glu Arg Asp Val Leu Gly Gly Leu Lys Val Lys Asn Val Val Thr Gly	230	235	240	2277
gat gtt tct gat tta aaa gtt tct gga ttg ttc ttt gct att ggt cat Asp Val Ser Asp Leu Lys Val Ser Gly Leu Phe Phe Ala Ile Gly His	245	250	255	2325
gag cca gct acc aag ttt ttg gat ggt ggt gtt gag tta gat tcg gat Glu Pro Ala Thr Lys Phe Leu Asp Gly Gly Val Glu Leu Asp Ser Asp	260	265	270	2373
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gtt ttc gct gcg ggt gat gtt cag gat aag aag tat agg caa gcc atc Val Phe Ala Ala Gly Asp Val Gln Asp Lys Lys Tyr Arg Gln Ala Ile	290	295	300	2469
act gct gca gga act ggg tgc atg gca gct ttg gat gca gag cat tac Thr Ala Ala Gly Thr Gly Cys Met Ala Ala Leu Asp Ala Glu His Tyr	310	315	320	2517
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 <211> 333  
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 35 40 45  
 Gly Gln Leu Thr Thr Thr Thr Asp Val Glu Asn Phe Pro Gly Phe Pro  
 50 55 60  
 Glu Gly Ile Leu Gly Val Glu Leu Thr Asp Lys Phe Arg Lys Gln Ser  
 65 70 75 80  
 Glu Arg Phe Gly Thr Thr Ile Phe Thr Glu Thr Val Thr Lys Val Asp  
 85 90 95  
 Phe Ser Ser Lys Pro Phe Lys Leu Phe Thr Asp Ser Lys Ala Ile Leu  
 100 105 110  
 Ala Asp Ala Val Ile Leu Ala Thr Gly Ala Val Ala Lys Arg Leu Ser  
 115 120 125  
 Phe Val Gly Ser Gly Glu Gly Ser Gly Gly Phe Trp Asn Arg Gly Ile  
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 145 150 155 160  
 Pro Leu Ala Val Ile Gly Gly Gly Asp Ser Ala Met Glu Glu Ala Asn  
 165 170 175  
 Phe Leu Thr Lys Tyr Gly Ser Lys Val Tyr Ile Ile His Arg Arg Asp  
 180 185 190  
 Ala Phe Arg Ala Ser Lys Ile Met Gln Gln Arg Ala Leu Ser Asn Pro  
 195 200 205  
 Lys Ile Asp Val Ile Trp Asn Ser Ser Val Val Glu Ala Tyr Gly Asp  
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 Gly Glu Arg Asp Val Leu Gly Gly Leu Lys Val Lys Asn Val Val Thr  
 225 230 235 240  
 Gly Asp Val Ser Asp Leu Lys Val Ser Gly Leu Phe Phe Ala Ile Gly  
 245 250 255  
 His Glu Pro Ala Thr Lys Phe Leu Asp Gly Gly Val Glu Leu Asp Ser  
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<220>  
 <221> CDS  
 <222> (1555)...(1907)  
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 <222> (2148)...(3315)

<223> Chimeric: Arabidopsis oleosin and thioredoxin-reductase gene derived from *Arabidopsis thaliana* fused with phaseolin promotor and phaseolin terminator derived from *Phaseolus vulgaris*.

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                                     10
                                     15

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                                     25
                                     30

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                                     40
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Ser Trp Ile Tyr Lys
115

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His Asp Arg Asp Arg Thr Arg Gly Gly Gln His Thr Thr Met Asn Gly	
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Leu Glu Thr His Asn Thr Arg Leu Cys Ile Val Gly Ser Gly Pro Ala	
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Ala His Thr Ala Ala Ile Tyr Ala Ala Arg Ala Glu Leu Lys Pro Leu	
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225 230 235 240	
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Lys Pro Phe Lys Leu Phe Thr Asp Ser Lys Ala Ile Leu Ala Asp Ala	
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Lys Tyr Gly Ser Lys Val Tyr Ile Ile His Arg Arg Asp Ala Phe Arg	
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Ala	Gly	Gly	Ser	Leu	Leu	Val	Leu	Ser	Ser	Leu	Thr	Leu	Val	Gly	Thr	385	390	395	400
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Ile	Leu	Val	Pro	Ala	Leu	Ile	Thr	Val	Ala	Leu	Leu	Ile	Thr	Gly	Phe		
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<220>  
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Tyr	Tyr	Gly	Gln	Gln	His	Thr	Gly	Gly	Glu	His	Asp	Arg	Asp	Arg	Thr		
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<223> Chimeric: Arabidopsis oleosin gene derived from *arabidopsis thaliana* fused to Mlep thioredoxin-reductase and thioredoxin gene derived from *Mycobacterium leprae* fused with the phaseolin promotor and phaseolin terminator derived from *Phaseolus vulgaris*

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Thr Pro Ser Ala His Glu Thr Ile His Glu Val Ile Val Ile Gly Ser									
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Pro Glu Leu Met Asp Asp Met Arg Glu Gln Ala Leu Arg Phe Gly Ala	
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Thr Glu Glu Thr Gly Asp Val Asp Ser Thr Asp Thr Thr Asp Trp Ser	500	505	510	
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Val Leu Glu Glu Ile Ala Ser Glu Gln Arg Asn Gln Leu Thr Val Ala	565	570	575	
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Lys Leu Asp Val Asp Thr Asn Pro Glu Met Ala Arg Glu Phe Gln Val	580	585	590	
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Val Ser Ile Pro Thr Met Ile Leu Phe Gln Gly Gly Gln Pro Val Lys	595	600	605	
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65          70          75          80
Ala Ala Leu Tyr Ala Ala Arg Ala Gln Leu Thr Pro Leu Val Phe Glu
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<223> Chimeric: Arabidopsis oleosin and thioredoxin-reductase genes and linker derived from *Arabidopsis Thaliana* fused with phaseolin promotor and terminator derived from *Phaseolus Vulgaris*.

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Gly Thr Val Ile Ala Leu Thr Val Ala Thr Pro Leu Leu Val Ile Phe						
70 75 80						
agc cca atc ctt gtc ccg gct ctc atc aca gtt gca ctc ctc atc acc	1844					
Ser Pro Ile Leu Val Pro Ala Leu Ile Thr Val Ala Leu Leu Ile Thr						
85 90 95						
ggt ttt ctt tcc tct gga ggg ttt ggc att gcc gct ata acc gtt ttc	1892					
Gly Phe Leu Ser Ser Gly Gly Phe Gly Ile Ala Ala Ile Thr Val Phe						
100 105 110						
tct tgg att tac aa gtaagcacac atttatcatc ttacttcata attttgtgca	1946					
Ser Trp Ile Tyr Lys						
115						
atatgtgcat gcatgtgttg agccagtagc tttggatcaa tttttttggt cgaataacaa	2006					
atgtaacaat aagaaattgc aaattctagg gaacatttgg ttaactaaat acgaaatttg	2066					
acctagctag cttgaatgtg tctgtgtata tcatctatat aggtaaaatg cttggtatga	2126					
tacctattga ttgtgaatag g tac gca acg gga gag cac cca cag gga tca	2177					
	Tyr Ala Thr Gly Glu His Pro Gln Gly Ser					
	120 125					
gac aag ttg gac agt gca agg atg aag ttg gga agc aaa gct cag gat	2225					
Asp Lys Leu Asp Ser Ala Arg Met Lys Leu Gly Ser Lys Ala Gln Asp						
130 135 140						
ctg aaa gac aga gct cag tac tac gga cag caa cat act ggt ggg gaa	2273					
Leu Lys Asp Arg Ala Gln Tyr Tyr Gly Gln Gln His Thr Gly Gly Glu						
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cat gac cgt gac cgt act cgt ggt ggc cag cac act acc atg aat ggt	2321					
His Asp Arg Asp Arg Thr Arg Gly Gly Gln His Thr Thr Met Asn Gly						
165 170 175						
ctc gaa act cac aac aca agg ctc tgt atc gta gga agt ggc cca gcg	2369					
Leu Glu Thr His Asn Thr Arg Leu Cys Ile Val Gly Ser Gly Pro Ala						
180 185 190						
gca cac acg gcg gcg att tac gca gct agg gct gaa ctt aaa cct ctt	2417					
Ala His Thr Ala Ala Ile Tyr Ala Ala Arg Ala Glu Leu Lys Pro Leu						
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ctc ttc gaa gga tgg atg gct aac gac atc gct ccc ggt ggt caa cta	2465					

Leu	Phe	Glu	Gly	Trp	Met	Ala	Asn	Asp	Ile	Ala	Pro	Gly	Gly	Gln	Leu	
210						215				220						
aca	acc	acc	acc	gac	gtc	gag	aat	ttc	ccc	gga	ttt	cca	gaa	ggc	att	2513
Thr	Thr	Thr	Thr	Asp	Val	Glu	Asn	Phe	Pro	Gly	Phe	Pro	Glu	Gly	Ile	
225					230					235					240	
ctc	gga	gta	gag	ctc	act	gac	aaa	ttc	cgt	aaa	caa	tcg	gag	cga	ttc	2561
Leu	Gly	Val	Glu	Leu	Thr	Asp	Lys	Phe	Arg	Lys	Gln	Ser	Glu	Arg	Phe	
				245					250					255		
ggc	act	acg	ata	ttt	aca	gag	acg	gtg	acg	aaa	gtc	gat	ttc	tct	tcg	2609
Gly	Thr	Thr	Ile	Phe	Thr	Glu	Thr	Val	Thr	Lys	Val	Asp	Phe	Ser	Ser	
			260					265					270			
aaa	ccg	ttt	aag	cta	ttc	aca	gat	tca	aaa	gcc	att	ctc	gct	gac	gct	2657
Lys	Pro	Phe	Lys	Leu	Phe	Thr	Asp	Ser	Lys	Ala	Ile	Leu	Ala	Asp	Ala	
		275					280					285				
gtg	att	ctc	gct	act	gga	gct	gtg	gct	aag	cgg	ctt	agc	ttc	gtt	gga	2705
Val	Ile	Leu	Ala	Thr	Gly	Ala	Val	Ala	Lys	Arg	Leu	Ser	Phe	Val	Gly	
	290					295					300					
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Ser	Gly	Glu	Gly	Ser	Gly	Gly	Phe	Trp	Asn	Arg	Gly	Ile	Ser	Ala	Cys	
305					310					315					320	
gct	gtt	tgc	gac	gga	gct	gct	ccg	ata	ttc	cgt	aac	aaa	cct	ctt	gcg	2801
Ala	Val	Cys	Asp	Gly	Ala	Ala	Pro	Ile	Phe	Arg	Asn	Lys	Pro	Leu	Ala	
				325					330					335		
gtg	atc	ggc	gga	ggc	gat	tca	gca	atg	gaa	gaa	gca	aac	ttt	ctt	aca	2849
Val	Ile	Gly	Gly	Gly	Asp	Ser	Ala	Met	Glu	Glu	Ala	Asn	Phe	Leu	Thr	
			340					345					350			
aaa	tat	gga	tct	aaa	gtg	tat	ata	atc	cat	agg	aga	gat	gct	ttt	aga	2897
Lys	Tyr	Gly	Ser	Lys	Val	Tyr	Ile	Ile	His	Arg	Arg	Asp	Ala	Phe	Arg	
		355					360					365				
gcg	tct	aag	att	atg	cag	cag	cga	gct	ttg	tct	aat	cct	aag	att	gat	2945
Ala	Ser	Lys	Ile	Met	Gln	Gln	Arg	Ala	Leu	Ser	Asn	Pro	Lys	Ile	Asp	
	370					375					380					
gtg	att	tgg	aac	tcg	tct	gtt	gtg	gaa	gct	tat	gga	gat	gga	gaa	aga	2993
Val	Ile	Trp	Asn	Ser	Ser	Val	Val	Glu	Ala	Tyr	Gly	Asp	Gly	Glu	Arg	
	385				390					395					400	
gat	gtg	ctt	gga	gga	ttg	aaa	gtg	aag	aat	gtg	gtt	acc	gga	gat	gtt	3041
Asp	Val	Leu	Gly	Gly	Leu	Lys	Val	Lys	Asn	Val	Val	Thr	Gly	Asp	Val	
			405						410					415		
tct	gat	tta	aaa	gtt	tct	gga	ttg	ttc	ttt	gct	att	ggc	cat	gag	cca	3089
Ser	Asp	Leu	Lys	Val	Ser	Gly	Leu	Phe	Phe	Ala	Ile	Gly	His	Glu	Pro	
			420					425					430			
gct	acc	aag	ttt	ttg	gat	ggc	ggc	gtt	gag	tta	gat	tcg	gat	ggc	tat	3137
Ala	Thr	Lys	Phe	Leu	Asp	Gly	Gly	Val	Glu	Leu	Asp	Ser	Asp	Gly	Tyr	
		435					440					445				
gtt	gtc	acg	aag	cct	ggc	act	aca	cag	act	agc	gtt	ccc	gga	gtt	ttc	3185
Val	Val	Thr	Lys	Pro	Gly	Thr	Thr	Gln	Thr	Ser	Val	Pro	Gly	Val	Phe	
		450				455					460					
gct	gcg	ggc	gat	gtt	cag	gat	aag	aag	tat	agg	caa	gcc	atc	act	gct	3233
Ala	Ala	Gly	Asp	Val	Gln	Asp	Lys	Lys	Tyr	Arg	Gln	Ala	Ile	Thr	Ala	
465					470					475					480	

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Ala Gly Thr Gly Cys Met Ala Ala Leu Asp Ala Glu His Tyr Leu Gln	
485 490 495	
gag att gct gga tgc aag gct aac gag acc acc gag gaa act gga gat	3329
Glu Ile Ala Gly Ser Lys Ala Asn Glu Thr Thr Glu Glu Thr Gly Asp	
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Val Asp Ser Thr Asp Thr Thr Asp Trp Ser Thr Ala Met Glu Glu Gly	
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caa gtg atc gcc tgc cac acc gtt gag aca tgg aac gag cag ctt cag	3425
Gln Val Ile Ala Cys His Thr Val Glu Thr Trp Asn Glu Gln Leu Gln	
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aag gct aat gaa tcc aaa act ctt gtg gtg gtt gat ttc acg gct tct	3473
Lys Ala Asn Glu Ser Lys Thr Leu Val Val Val Asp Phe Thr Ala Ser	
545 550 555 560	
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Trp Cys Gly Pro Cys Arg Phe Ile Ala Pro Phe Phe Ala Asp Leu Ala	
565 570 575	
aag aaa ctt cct aac gtg ctt ttc ctc aag gtt gat act gat gaa ttg	3569
Lys Lys Leu Pro Asn Val Leu Phe Leu Lys Val Asp Thr Asp Glu Leu	
580 585 590	
aag tgc gtg gca agt gat tgg gcg ata cag gcg atg cca acc ttc atg	3617
Lys Ser Val Ala Ser Asp Trp Ala Ile Gln Ala Met Pro Thr Phe Met	
595 600 605	
ttt ttg aag gaa ggg aag att ttg gac aaa gtt gtt gga gcc aag aaa	3665
Phe Leu Lys Glu Gly Lys Ile Leu Asp Lys Val Val Gly Ala Lys Lys	
610 615 620	
gat gag ctt cag tct acc att gcc aaa cac ttg gct taagcttaaa	3711
Asp Glu Leu Gln Ser Thr Ile Ala Lys His Leu Ala	
625 630 635	
taagtatgaa ctaaaaatgca tgtagggtgta agagctcatg gagagcatgg aatattgtat	3771
ccgaccatgt aacagtataa taactgagct ccatctcact tcttctatga ataaacaaag	3831
gatgttatga tatattaaca ctctatctat gcaccttatt gttctatgat aaatttcctc	3891
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caaagtgtgta ctataagact ttctaaacaa ttctaacttt agcattgtga acgagacata	4011
agtgttaaga agacataaca attataatgg aagaagtttg tctccattta tatattatat	4071
attaccact tatgtattat attaggatgt taaggagaca taacaattat aaagagagaa	4131
gtttgtatcc atttatatat tatatactac ccatttatat attatactta tccacttatt	4191
taatgtcttt ataaggtttg atccatgata ttctaatat tttagttgat atgtatatga	4251
aagggtacta tttgaactct cttactctgt ataaaggttg gatcatcctt aaagtgggtc	4311
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atttaacaaa ttattattta acactatatg aaattttttt tttttatcgg caaggaaata	4611
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gtttgctgca taatttatgc agtaaaacac tacacataac ccttttagca gtagagcaat	4791
ggttgaccgt gtgcttagct tcttttattt tattttttta tcagcaaaga ataaataaaa	4851
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tagcacccta ccaactaagg tacc	4935

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 Arg Gly Ser Asp Tyr Ser Lys Ser Arg Gln Ile Ala Lys Ala Ala Thr  
 35 40 45  
 Ala Val Thr Ala Gly Gly Ser Leu Leu Val Leu Ser Ser Leu Thr Leu  
 50 55 60  
 Val Gly Thr Val Ile Ala Leu Thr Val Ala Thr Pro Leu Leu Val Ile  
 65 70 75 80  
 Phe Ser Pro Ile Leu Val Pro Ala Leu Ile Thr Val Ala Leu Leu Ile  
 85 90 95  
 Thr Gly Phe Leu Ser Ser Gly Gly Phe Gly Ile Ala Ala Ile Thr Val  
 100 105 110  
 Phe Ser Trp Ile Tyr Lys  
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 <223> thioredoxin reductase

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 <223> linker

<221> SITE  
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 35 40 45  
 Arg Gly Gly Gln His Thr Thr Met Asn Gly Leu Glu Thr His Asn Thr  
 50 55 60  
 Arg Leu Cys Ile Val Gly Ser Gly Pro Ala Ala His Thr Ala Ala Ile  
 65 70 75 80  
 Tyr Ala Ala Arg Ala Glu Leu Lys Pro Leu Leu Phe Glu Gly Trp Met  
 85 90 95  
 Ala Asn Asp Ile Ala Pro Gly Gly Gln Leu Thr Thr Thr Thr Asp Val  
 100 105 110  
 Glu Asn Phe Pro Gly Phe Pro Glu Gly Ile Leu Gly Val Glu Leu Thr  
 115 120 125  
 Asp Lys Phe Arg Lys Gln Ser Glu Arg Phe Gly Thr Thr Ile Phe Thr  
 130 135 140  
 Glu Thr Val Thr Lys Val Asp Phe Ser Ser Lys Pro Phe Lys Leu Phe  
 145 150 155 160

Thr Asp Ser Lys Ala Ile Leu Ala Asp Ala Val Ile Leu Ala Thr Gly  
 165 170 175  
 Ala Val Ala Lys Arg Leu Ser Phe Val Gly Ser Gly Glu Gly Ser Gly  
 180 185 190  
 Gly Phe Trp Asn Arg Gly Ile Ser Ala Cys Ala Val Cys Asp Gly Ala  
 195 200 205  
 Ala Pro Ile Phe Arg Asn Lys Pro Leu Ala Val Ile Gly Gly Gly Asp  
 210 215 220  
 Ser Ala Met Glu Glu Ala Asn Phe Leu Thr Lys Tyr Gly Ser Lys Val  
 225 230 235 240  
 Tyr Ile Ile His Arg Arg Asp Ala Phe Arg Ala Ser Lys Ile Met Gln  
 245 250 255  
 Gln Arg Ala Leu Ser Asn Pro Lys Ile Asp Val Ile Trp Asn Ser Ser  
 260 265 270  
 Val Val Glu Ala Tyr Gly Asp Gly Glu Arg Asp Val Leu Gly Gly Leu  
 275 280 285  
 Lys Val Lys Asn Val Val Thr Gly Asp Val Ser Asp Leu Lys Val Ser  
 290 295 300  
 Gly Leu Phe Phe Ala Ile Gly His Glu Pro Ala Thr Lys Phe Leu Asp  
 305 310 315 320  
 Gly Gly Val Glu Leu Asp Ser Asp Gly Tyr Val Val Thr Lys Pro Gly  
 325 330 335  
 Thr Thr Gln Thr Ser Val Pro Gly Val Phe Ala Ala Gly Asp Val Gln  
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 Asp Lys Lys Tyr Arg Gln Ala Ile Thr Ala Ala Gly Thr Gly Cys Met  
 355 360 365  
 Ala Ala Leu Asp Ala Glu His Tyr Leu Gln Glu Ile Ala Gly Ser Lys  
 370 375 380  
 Ala Asn Glu Thr Thr Glu Glu Thr Gly Asp Val Asp Ser Thr Asp Thr  
 385 390 395 400  
 Thr Asp Trp Ser Thr Ala Met Glu Glu Gly Gln Val Ile Ala Cys His  
 405 410 415  
 Thr Val Glu Thr Trp Asn Glu Gln Leu Lys Ala Asn Glu Ser Lys  
 420 425 430  
 Thr Leu Val Val Val Asp Phe Thr Ala Ser Trp Cys Gly Pro Cys Arg  
 435 440 445  
 Phe Ile Ala Pro Phe Phe Ala Asp Leu Ala Lys Lys Leu Pro Asn Val  
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 Leu Phe Leu Lys Val Asp Thr Asp Glu Leu Lys Ser Val Ala Ser Asp  
 465 470 475 480  
 Trp Ala Ile Gln Ala Met Pro Thr Phe Met Phe Leu Lys Glu Gly Lys  
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 Ile Ala Lys His Leu Ala  
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<210> 36  
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 <213> Mycobacterium leprae

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 Ile Gly Ser Gly Pro Ala Gly Tyr Thr Ala Ala Leu Tyr Ala Ala Arg  
 20 25 30  
 Ala Gln Leu Thr Pro Leu Val Phe Glu Gly Thr Ser Phe Gly Gly Ala  
 35 40 45  
 Leu Met Thr Thr Thr Glu Val Glu Asn Tyr Pro Gly Phe Arg Asn Gly  
 50 55 60  
 Ile Thr Gly Pro Glu Leu Met Asp Asp Met Arg Glu Gln Ala Leu Arg  
 65 70 75 80  
 Phe Gly Ala Glu Leu Arg Thr Glu Asp Val Glu Ser Val Ser Leu Arg  
 85 90 95  
 Gly Pro Ile Lys Ser Val Val Thr Ala Glu Gly Gln Thr Tyr Gln Ala



Arg	Ala	Val	100	Leu	Ala	Met	Gly	105	Thr	Ser	Val	Arg	Tyr	110	Leu	Gln	Ile
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Pro	Gly	Glu	Gln	Glu	Leu	Leu	Gly	Arg	Gly	Val	Ser	Ala	Cys	Ala	Thr		
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Cys	Asp	Gly	Ser	Phe	Phe	Arg	Gly	Gln	Asp	Ile	Ala	Val	Ile	Gly	Gly		
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Gly	Asp	Ser	Ala	Met	Glu	Glu	Ala	Leu	Phe	Leu	Thr	Arg	Phe	Ala	Arg		
			165					170					175				
Ser	Val	Thr	Leu	Val	His	Arg	Arg	Asp	Glu	Phe	Arg	Ala	Ser	Lys	Ile		
		180						185					190				
Met	Leu	Gly	Arg	Ala	Arg	Asn	Asn	Asp	Lys	Ile	Lys	Phe	Ile	Thr	Asn		
	195					200						205					
His	Thr	Val	Val	Ala	Val	Asn	Gly	Tyr	Thr	Thr	Val	Thr	Gly	Leu	Arg		
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Leu	Arg	Asn	Thr	Thr	Thr	Gly	Glu	Glu	Thr	Thr	Leu	Val	Val	Thr	Gly		
225					230				235								
Val	Phe	Val	Ala	Ile	Gly	His	Glu	Pro	Arg	Ser	Ser	Leu	Val	Ser	Asp		
			245					250						255			
Val	Val	Asp	Ile	Asp	Pro	Asp	Gly	Tyr	Val	Leu	Val	Lys	Gly	Arg	Thr		
		260						265					270				
Thr	Ser	Thr	Ser	Met	Asp	Gly	Val	Phe	Ala	Ala	Gly	Asp	Leu	Val	Asp		
	275					280						285					
Arg	Thr	Tyr	Arg	Gln	Ala	Ile	Thr	Ala	Ala	Gly	Ser	Gly	Cys	Ala	Ala		
	290				295						300						
Ala	Ile	Asp	Ala	Glu	Arg	Trp	Leu	Ala	Glu	His	Ala	Gly	Ser	Lys	Ala		
305					310					315					320		
Asn	Glu	Thr	Thr	Glu	Glu	Thr	Gly	Asp	Val	Asp	Ser	Thr	Asp	Thr	Thr		
			325					330						335			
Asp	Trp	Ser	Thr	Ala	Met	Thr	Asp	Ala	Lys	Asn	Ala	Gly	Val	Thr	Ile		
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Glu	Val	Thr	Asp	Ala	Ser	Phe	Phe	Ala	Asp	Val	Leu	Ser	Ser	Asn	Lys		
	355					360						365					
Pro	Val	Leu	Val	Asp	Phe	Trp	Ala	Thr	Trp	Cys	Gly	Pro	Cys	Lys	Met		
	370				375						380						
Val	Ala	Pro	Val	Leu	Glu	Glu	Ile	Ala	Ser	Glu	Gln	Arg	Asn	Gln	Leu		
385					390					395					400		
Thr	Val	Ala	Lys	Leu	Asp	Val	Asp	Thr	Asn	Pro	Glu	Met	Ala	Arg	Glu		
			405					410						415			
Phe	Gln	Val	Val	Ser	Ile	Pro	Thr	Met	Ile	Leu	Phe	Gln	Gly	Gly	Gln		
		420						425					430				
Pro	Val	Lys	Arg	Ile	Val	Gly	Ala	Lys	Gly	Lys	Ala	Ala	Leu	Leu	Arg		
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	450					455											

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 35 40 45  
 Gly Gln Leu Thr Thr Thr Thr Asp Val Glu Asn Phe Pro Gly Phe Pro  
 50 55 60  
 Glu Gly Ile Leu Gly Val Glu Leu Thr Asp Lys Phe Arg Lys Gln Ser  
 65 70 75 80  
 Glu Arg Phe Gly Thr Thr Ile Phe Thr Glu Thr Val Thr Lys Val Asp  
 85 90 95  
 Phe Ser Ser Lys Pro Phe Lys Leu Phe Thr Asp Ser Lys Ala Ile Leu  
 100 105 110



Val	Asp	Phe	Thr	Ala	Ser	Trp	Cys	Gly	Pro	Cys	Arg	Phe	Ile	Ala	Pro		
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ttc	ttt	gct	gat	ttg	gct	aag	aaa	ctt	cct	aac	gtg	ctt	ttc	ctc	aag	192	
Phe	Phe	Ala	Asp	Leu	Ala	Lys	Lys	Leu	Pro	Asn	Val	Leu	Phe	Leu	Lys		
	50					55				60							
gtt	gat	act	gat	gaa	ttg	aag	tcg	gtg	gca	agt	gat	tgg	gcg	ata	cag	240	
Val	Asp	Thr	Asp	Glu	Leu	Lys	Ser	Val	Ala	Ser	Asp	Trp	Ala	Ile	Gln		
65				70				75							80		
gcg	atg	cca	acc	ttc	atg	ttt	ttg	aag	gaa	ggg	aag	att	ttg	gac	aaa	288	
Ala	Met	Pro	Thr	Phe	Met	Phe	Leu	Lys	Glu	Gly	Lys	Ile	Leu	Asp	Lys		
			85					90						95			
gtt	gtt	gga	gcc	aag	aaa	gat	gag	ctt	cag	tct	acc	att	gcc	aaa	cac	336	
Val	Val	Gly	Ala	Lys	Lys	Asp	Glu	Leu	Gln	Ser	Thr	Ile	Ala	Lys	His		
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ttg	gct	taa														345	
Leu	Ala	*															

<210> 39  
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 <213> Arabidopsis thaliana

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Trp	Asn	Glu	Gln	Leu	Gln	Lys	Ala	Asn	Glu	Ser	Lys	Thr	Leu	Val	Val		
		20						25					30				
Val	Asp	Phe	Thr	Ala	Ser	Trp	Cys	Gly	Pro	Cys	Arg	Phe	Ile	Ala	Pro		
	35						40					45					
Phe	Phe	Ala	Asp	Leu	Ala	Lys	Lys	Leu	Pro	Asn	Val	Leu	Phe	Leu	Lys		
	50					55				60							
Val	Asp	Thr	Asp	Glu	Leu	Lys	Ser	Val	Ala	Ser	Asp	Trp	Ala	Ile	Gln		
65				70				75							80		
Ala	Met	Pro	Thr	Phe	Met	Phe	Leu	Lys	Glu	Gly	Lys	Ile	Leu	Asp	Lys		
			85					90						95			
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Leu	Ala																

<210> 40  
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<220>  
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1			5					10					15				
ggc	cca	gcg	gca	cac	acg	gcg	gcg	att	tac	gca	gct	agg	gct	gaa	ctt	96	
Gly	Pro	Ala	Ala	His	Thr	Ala	Ala	Ile	Tyr	Ala	Ala	Arg	Ala	Glu	Leu		
		20						25					30				
aaa	cct	ctt	ctc	ttc	gaa	gga	tgg	atg	gct	aac	gac	atc	gct	ccc	ggt	144	

Lys	Pro	Leu	Leu	Phe	Glu	Gly	Trp	Met	Ala	Asn	Asp	Ile	Ala	Pro	Gly	
		35					40					45				
ggt	caa	ctc	aac	caa	cca	ccg	cgt	gag	aat	ttc	ccc	gga	ttt	cca	gaa	192
Gly	Gln	Leu	Asn	Gln	Pro	Pro	Arg	Glu	Asn	Phe	Pro	Gly	Phe	Pro	Glu	
	50					55					60					
ggt	att	ctc	gga	gta	gag	ctc	act	gac	aaa	ttc	cgt	aaa	caa	tcg	gag	240
Gly	Ile	Leu	Gly	Val	Glu	Leu	Thr	Asp	Lys	Phe	Arg	Lys	Gln	Ser	Glu	
	65				70					75					80	
cga	ttc	ggt	act	acg	ata	ttt	aca	gag	acg	gtg	acg	aaa	gtc	gat	ttc	288
Arg	Phe	Gly	Thr	Thr	Ile	Phe	Thr	Glu	Thr	Val	Thr	Lys	Val	Asp	Phe	
				85					90					95		
tct	tcg	aaa	ccg	ttt	aag	cta	ttc	aca	gat	tca	aaa	gcc	att	ctc	gct	336
Ser	Ser	Lys	Pro	Phe	Lys	Leu	Phe	Thr	Asp	Ser	Lys	Ala	Ile	Leu	Ala	
			100					105					110			
gac	gct	gtg	att	ctc	gct	atc	gga	gct	gtg	gct	aag	tgg	ctt	agc	ttc	384
Asp	Ala	Val	Ile	Leu	Ala	Ile	Gly	Ala	Val	Ala	Lys	Trp	Leu	Ser	Phe	
		115					120					125				
gtt	gga	tct	ggt	gaa	gtt	ctc	gga	ggt	ttg	tgg	aac	cgt	gga	atc	tcc	432
Val	Gly	Ser	Gly	Glu	Val	Leu	Gly	Gly	Leu	Trp	Asn	Arg	Gly	Ile	Ser	
	130					135					140					
gct	tgt	gct	gtt	tgc	gac	gga	gct	gct	ccg	ata	ttc	cgc	aac	aaa	cct	480
Ala	Cys	Ala	Val	Cys	Asp	Gly	Ala	Ala	Pro	Ile	Phe	Arg	Asn	Lys	Pro	
	145				150					155					160	
ctt	gcg	gtg	atc	ggt	gga	ggc	gat	tct	gca	atg	gaa	gaa	gca	aac	ttt	528
Leu	Ala	Val	Ile	Gly	Gly	Gly	Asp	Ser	Ala	Met	Glu	Glu	Ala	Asn	Phe	
				165					170					175		
ctt	aca	aaa	tat	gga	tct	aaa	gtg	tat	ata	atc	gat	agg	aga	gat	gct	576
Leu	Thr	Lys	Tyr	Gly	Ser	Lys	Val	Tyr	Ile	Ile	Asp	Arg	Arg	Asp	Ala	
			180					185					190			
ttt	aga	gcg	tct	aag	att	atg	cag	cag	cga	gct	ttg	tct	aat	cct	aag	624
Phe	Arg	Ala	Ser	Lys	Ile	Met	Gln	Gln	Arg	Ala	Leu	Ser	Asn	Pro	Lys	
		195				200						205				
att	gat	gtg	att	tgg	aac	tcg	tct	gtt	gtg	gaa	gct	tat	gga	gat	gga	672
Ile	Asp	Val	Ile	Trp	Asn	Ser	Ser	Val	Val	Glu	Ala	Tyr	Gly	Asp	Gly	
	210					215					220					
gaa	aga	gat	gtg	ctt	gga	gga	ttg	aaa	gtg	aag	aat	gtg	gtt	acc	gga	720
Glu	Arg	Asp	Val	Leu	Gly	Gly	Leu	Lys	Val	Lys	Asn	Val	Val	Thr	Gly	
	225				230					235					240	
gat	gtt	tct	gat	tta	aaa	gtt	tct	gga	ttg	ttc	ttt	gct	att	ggt	cat	768
Asp	Val	Ser	Asp	Leu	Lys	Val	Ser	Gly	Leu	Phe	Phe	Ala	Ile	Gly	His	
				245					250					255		
gag	cca	gct	acc	aag	ttt	ttg	gat	ggt	ggt	gtt	gag	tta	gat	tcg	gat	816
Glu	Pro	Ala	Thr	Lys	Phe	Leu	Asp	Gly	Gly	Val	Glu	Leu	Asp	Ser	Asp	
			260					265					270			
ggt	tat	gtt	gtc	acg	aag	cct	ggt	act	aca	cag	act	agc	gtt	ccc	gga	864
Gly	Tyr	Val	Val	Thr	Lys	Pro	Gly	Thr	Thr	Gln	Thr	Ser	Val	Pro	Gly	
		275					280					285				
gtt	ttc	gct	gcg	ggt	gat	gtt	cag	gat	aag	aag	tat	agg	caa	gcc	atc	912
Val	Phe	Ala	Ala	Gly	Asp	Val	Gln	Asp	Lys	Lys	Tyr	Arg	Gln	Ala	Ile	
	290					295					300					

act gct gca gga act ggg tgc atg gca gct ttg gat gca gag cat tac 960  
 Thr Ala Ala Gly Thr Gly Cys Met Ala Ala Leu Asp Ala Glu His Tyr  
 305 310 315 320

tta caa gag att gga tct cag caa ggt aag agt gat tga 999  
 Leu Gln Glu Ile Gly Ser Gln Gln Gly Lys Ser Asp \*  
 325 330

<210> 41  
 <211> 332  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 41  
 Met Asn Gly Leu Glu Thr His Asn Thr Arg Leu Cys Ile Val Gly Ser  
 1 5 10 15  
 Gly Pro Ala Ala His Thr Ala Ala Ile Tyr Ala Ala Arg Ala Glu Leu  
 20 25 30  
 Lys Pro Leu Leu Phe Glu Gly Trp Met Ala Asn Asp Ile Ala Pro Gly  
 35 40 45  
 Gly Gln Leu Asn Gln Pro Pro Arg Glu Asn Phe Pro Gly Phe Pro Glu  
 50 55 60  
 Gly Ile Leu Gly Val Glu Leu Thr Asp Lys Phe Arg Lys Gln Ser Glu  
 65 70 75 80  
 Arg Phe Gly Thr Thr Ile Phe Thr Glu Thr Val Thr Lys Val Asp Phe  
 85 90 95  
 Ser Ser Lys Pro Phe Lys Leu Phe Thr Asp Ser Lys Ala Ile Leu Ala  
 100 105 110  
 Asp Ala Val Ile Leu Ala Ile Gly Ala Val Ala Lys Trp Leu Ser Phe  
 115 120 125  
 Val Gly Ser Gly Glu Val Leu Gly Gly Leu Trp Asn Arg Gly Ile Ser  
 130 135 140  
 Ala Cys Ala Val Cys Asp Gly Ala Ala Pro Ile Phe Arg Asn Lys Pro  
 145 150 155 160  
 Leu Ala Val Ile Gly Gly Asp Ser Ala Met Glu Glu Ala Asn Phe  
 165 170 175  
 Leu Thr Lys Tyr Gly Ser Lys Val Tyr Ile Ile Asp Arg Arg Asp Ala  
 180 185 190  
 Phe Arg Ala Ser Lys Ile Met Gln Gln Arg Ala Leu Ser Asn Pro Lys  
 195 200 205  
 Ile Asp Val Ile Trp Asn Ser Ser Val Val Glu Ala Tyr Gly Asp Gly  
 210 215 220  
 Glu Arg Asp Val Leu Gly Gly Leu Lys Val Lys Asn Val Val Thr Gly  
 225 230 235 240  
 Asp Val Ser Asp Leu Lys Val Ser Gly Leu Phe Phe Ala Ile Gly His  
 245 250 255  
 Glu Pro Ala Thr Lys Phe Leu Asp Gly Gly Val Glu Leu Asp Ser Asp  
 260 265 270  
 Gly Tyr Val Val Thr Lys Pro Gly Thr Thr Gln Thr Ser Val Pro Gly  
 275 280 285  
 Val Phe Ala Ala Gly Asp Val Gln Asp Lys Lys Tyr Arg Gln Ala Ile  
 290 295 300  
 Thr Ala Ala Gly Thr Gly Cys Met Ala Ala Leu Asp Ala Glu His Tyr  
 305 310 315 320  
 Leu Gln Glu Ile Gly Ser Gln Gln Gly Lys Ser Asp  
 325 330

<210> 42  
 <211> 332  
 <212> DNA  
 <213> E. coli

<220>  
 <221> CDS  
 <222> (1)...(332)

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<400> 42
atg agc gat aaa att att cac ctg act gac gac agt ttt gac acg gat 48
Met Ser Asp Lys Ile Ile His Leu Thr Asp Asp Ser Phe Asp Thr Asp
1 5 10 15

gta ctc aaa gcg gac ggg gct atc ctc gtt gat ttc tgg gca gag tgg 96
Val Leu Lys Ala Asp Gly Ala Ile Leu Val Asp Phe Trp Ala Glu Trp
20 25 30

tgc ggg ccg tgt aaa atg atc gct ccg att ctg gat gaa atc gct gac 144
Cys Gly Pro Cys Lys Met Ile Ala Pro Ile Leu Asp Glu Ile Ala Asp
35 40 45

gaa tat cag ggc aaa ttg acc gtt gcc aaa ctg aac att gac cag aac 192
Glu Tyr Gln Gly Lys Leu Thr Val Ala Lys Leu Asn Ile Asp Gln Asn
50 55 60

cca ggt act gcg cct aaa tat ggc atc cgc ggt att ccg act ctg ctg 240
Pro Gly Thr Ala Pro Lys Tyr Gly Ile Arg Gly Ile Pro Thr Leu Leu
65 70 75 80

ctg ttt aaa aac ggc gaa gtg gcg gca acc aaa gta ggc gca ctg tct 288
Leu Phe Lys Asn Gly Glu Val Ala Ala Thr Lys Val Gly Ala Leu Ser
85 90 95

aaa ggt cag ttg aaa gag ttt ctc gac gcc aat ctg gcg taa ta 332
Lys Gly Gln Leu Lys Glu Phe Leu Asp Ala Asn Leu Ala *
100 105

```

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<210> 43
<211> 109
<212> PRT
<213> E. coli

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<400> 43
Met Ser Asp Lys Ile Ile His Leu Thr Asp Asp Ser Phe Asp Thr Asp
1 5 10 15
Val Leu Lys Ala Asp Gly Ala Ile Leu Val Asp Phe Trp Ala Glu Trp
20 25 30
Cys Gly Pro Cys Lys Met Ile Ala Pro Ile Leu Asp Glu Ile Ala Asp
35 40 45
Glu Tyr Gln Gly Lys Leu Thr Val Ala Lys Leu Asn Ile Asp Gln Asn
50 55 60
Pro Gly Thr Ala Pro Lys Tyr Gly Ile Arg Gly Ile Pro Thr Leu Leu
65 70 75 80
Leu Phe Lys Asn Gly Glu Val Ala Ala Thr Lys Val Gly Ala Leu Ser
85 90 95
Lys Gly Gln Leu Lys Glu Phe Leu Asp Ala Asn Leu Ala
100 105

```

```

<210> 44
<211> 966
<212> DNA
<213> E. coli

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<220>
<221> CDS
<222> (1)...(966)

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<400> 44
atg ggc acg acc aaa cac agt aaa ctg ctt atc ctg ggt tca ggc ccg 48
Met Gly Thr Thr Lys His Ser Lys Leu Leu Ile Leu Gly Ser Gly Pro
1 5 10 15

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gcg gga tac acc gct gct gtc tac gcg gcg cgc gcc aac ctg caa cct	96
Ala Gly Tyr Thr Ala Ala Val Tyr Ala Ala Arg Ala Asn Leu Gln Pro	
20 25 30	
gtg ctg att acc ggc atg gaa aaa ggc ggc caa ctg acc acc acc acg	144
Val Leu Ile Thr Gly Met Glu Lys Gly Gly Gln Leu Thr Thr Thr	
35 40 45	
gaa gtg gaa aac tgg cct ggc gat cca aac gat ctg acc ggt ccg tta	192
Glu Val Glu Asn Trp Pro Gly Asp Pro Asn Asp Leu Thr Gly Pro Leu	
50 55 60	
tta atg gag cgc atg cac gaa cat gcc acc aag ttt gaa act gag atc	240
Leu Met Glu Arg Met His Glu His Ala Thr Lys Phe Glu Thr Glu Ile	
65 70 75 80	
att ttt gat cat atc aac aag gtg gat ctg caa aac cgt ccg ttc cgt	288
Ile Phe Asp His Ile Asn Lys Val Asp Leu Gln Asn Arg Pro Phe Arg	
85 90 95	
ctg aat ggc gat aac ggc gaa tac act tgc gac gcg ctg att att gcc	336
Leu Asn Gly Asp Asn Gly Glu Tyr Thr Cys Asp Ala Leu Ile Ile Ala	
100 105 110	
acc gga gct tct gca cgc tat ctc ggc ctg ccc tct gaa gaa gcc ttt	384
Thr Gly Ala Ser Ala Arg Tyr Leu Gly Leu Pro Ser Glu Glu Ala Phe	
115 120 125	
aaa ggc cgt ggg gtt tct gct tgt gca acc tgc gac ggt ttc ttc tat	432
Lys Gly Arg Gly Val Ser Ala Cys Ala Thr Cys Asp Gly Phe Phe Tyr	
130 135 140	
cgc aac cag aaa gtt gcg gtc atc ggc ggc ggc aat acc gcg gtt gaa	480
Arg Asn Gln Lys Val Ala Val Ile Gly Gly Gly Asn Thr Ala Val Glu	
145 150 155 160	
gag gcg ttg tat ctg tct aac atc gct tgc gaa gtg cat ctg att cac	528
Glu Ala Leu Tyr Leu Ser Asn Ile Ala Ser Glu Val His Leu Ile His	
165 170 175	
cgc cgt gac ggt ttc cgc gcg gaa aaa atc ctc att aag cgc ctg atg	576
Arg Arg Asp Gly Phe Arg Ala Glu Lys Ile Leu Ile Lys Arg Leu Met	
180 185 190	
gat aaa gtg gag aac ggc aac atc att ctg cac acc aac cgt acg ctg	624
Asp Lys Val Glu Asn Gly Asn Ile Ile Leu His Thr Asn Arg Thr Leu	
195 200 205	
gaa gaa gtg acc ggc gat caa atg ggt gtc act ggc gtt cgt ctg cgc	672
Glu Glu Val Thr Gly Asp Gln Met Gly Val Thr Gly Val Arg Leu Arg	
210 215 220	
gat acg caa aac agc gat aac atc gag tca ctc gac gtt gcc ggt ctg	720
Asp Thr Gln Asn Ser Asp Asn Ile Glu Ser Leu Asp Val Ala Gly Leu	
225 230 235 240	
ttt gtt gct atc ggt cac agc ccg aat act gcg att ttc gaa ggg cag	768
Phe Val Ala Ile Gly His Ser Pro Asn Thr Ala Ile Phe Glu Gly Gln	
245 250 255	
ctg gaa ctg gaa aac ggc tac atc aaa gta cag tgc ggt att cat ggt	816
Leu Glu Leu Glu Asn Gly Tyr Ile Lys Val Gln Ser Gly Ile His Gly	
260 265 270	
aat gcc acc cag acc agc att cct ggc gtc ttt gcc gca ggc gac gtg	864
Asn Ala Thr Gln Thr Ser Ile Pro Gly Val Phe Ala Ala Gly Asp Val	
275 280 285	

atg gat cac att tat cgc cag gcc att act tcg gcc ggt aca ggc tgc	912
Met Asp His Ile Tyr Arg Gln Ala Ile Thr Ser Ala Gly Thr Gly Cys	
290 295 300	
atg gca gca ctt gat gcg gaa cgc tac ctc gat ggt tta gct gac gca	960
Met Ala Ala Leu Asp Ala Glu Arg Tyr Leu Asp Gly Leu Ala Asp Ala	
305 310 315 320	
aaa taa	966
Lys *	

<210> 45  
 <211> 321  
 <212> PRT  
 <213> E. coli

<400> 45	
Met Gly Thr Thr Lys His Ser Lys Leu Leu Ile Leu Gly Ser Gly Pro	
1 5 10 15	
Ala Gly Tyr Thr Ala Ala Val Tyr Ala Arg Ala Asn Leu Gln Pro	
20 25 30	
Val Leu Ile Thr Gly Met Glu Lys Gly Gly Gln Leu Thr Thr Thr Thr	
35 40 45	
Glu Val Glu Asn Trp Pro Gly Asp Pro Asn Asp Leu Thr Gly Pro Leu	
50 55 60	
Leu Met Glu Arg Met His Glu His Ala Thr Lys Phe Glu Thr Glu Ile	
65 70 75 80	
Ile Phe Asp His Ile Asn Lys Val Asp Leu Gln Asn Arg Pro Phe Arg	
85 90 95	
Leu Asn Gly Asp Asn Gly Glu Tyr Thr Cys Asp Ala Leu Ile Ile Ala	
100 105 110	
Thr Gly Ala Ser Ala Arg Tyr Leu Gly Leu Pro Ser Glu Glu Ala Phe	
115 120 125	
Lys Gly Arg Gly Val Ser Ala Cys Ala Thr Cys Asp Gly Phe Phe Tyr	
130 135 140	
Arg Asn Gln Lys Val Ala Val Ile Gly Gly Gly Asn Thr Ala Val Glu	
145 150 155 160	
Glu Ala Leu Tyr Leu Ser Asn Ile Ala Ser Glu Val His Leu Ile His	
165 170 175	
Arg Arg Asp Gly Phe Arg Ala Glu Lys Ile Leu Ile Lys Arg Leu Met	
180 185 190	
Asp Lys Val Glu Asn Gly Asn Ile Ile Leu His Thr Asn Arg Thr Leu	
195 200 205	
Glu Glu Val Thr Gly Asp Gln Met Gly Val Thr Gly Val Arg Leu Arg	
210 215 220	
Asp Thr Gln Asn Ser Asp Asn Ile Glu Ser Leu Asp Val Ala Gly Leu	
225 230 235 240	
Phe Val Ala Ile Gly His Ser Pro Asn Thr Ala Ile Phe Glu Gly Gln	
245 250 255	
Leu Glu Leu Glu Asn Gly Tyr Ile Lys Val Gln Ser Gly Ile His Gly	
260 265 270	
Asn Ala Thr Gln Thr Ser Ile Pro Gly Val Phe Ala Ala Gly Asp Val	
275 280 285	
Met Asp His Ile Tyr Arg Gln Ala Ile Thr Ser Ala Gly Thr Gly Cys	
290 295 300	
Met Ala Ala Leu Asp Ala Glu Arg Tyr Leu Asp Gly Leu Ala Asp Ala	
305 310 315 320	
Lys	

<210> 46  
 <211> 318  
 <212> DNA



<213> Homo Sapien

<220>

<221> CDS

<222> (1) ... (318)

<400> 46

atg	gtg	aag	cag	atc	gag	agc	aag	act	gct	ttt	cag	gaa	gcc	ttg	gac	48
Met	Val	Lys	Gln	Ile	Glu	Ser	Lys	Thr	Ala	Phe	Gln	Glu	Ala	Leu	Asp	
1				5					10					15		
gct	gca	ggg	gat	aaa	ctt	gta	gta	gtt	gac	ttc	tca	gcc	acg	ttg	tgt	96
Ala	Ala	Gly	Asp	Lys	Leu	Val	Val	Val	Asp	Phe	Ser	Ala	Thr	Trp	Cys	
			20					25					30			
ggg	cct	tgc	aaa	atg	atc	aag	cct	ttc	ttt	cat	tcc	ctc	tct	gaa	aag	144
Gly	Pro	Cys	Lys	Met	Ile	Lys	Pro	Phe	Phe	His	Ser	Leu	Ser	Glu	Lys	
		35					40					45				
tat	tcc	aac	gtg	ata	ttc	ctt	gaa	gta	gat	gtg	gat	gac	tgt	cag	gat	192
Tyr	Ser	Asn	Val	Ile	Phe	Leu	Glu	Val	Asp	Val	Asp	Asp	Cys	Gln	Asp	
	50					55					60					
ggt	gct	tca	gag	tgt	gaa	gtc	aaa	tgc	atg	cca	aca	ttc	cag	ttt	ttt	240
Val	Ala	Ser	Glu	Cys	Glu	Val	Lys	Cys	Met	Pro	Thr	Phe	Gln	Phe	Phe	
65					70				75						80	
aag	aag	gga	caa	aag	gtg	ggg	gaa	ttt	tct	gga	gcc	aat	aag	gaa	aag	288
Lys	Lys	Gly	Gln	Lys	Val	Gly	Glu	Phe	Ser	Gly	Ala	Asn	Lys	Glu	Lys	
				85					90					95		
ctt	gaa	gcc	acc	att	aat	gaa	tta	gtc	taa							318
Leu	Glu	Ala	Thr	Ile	Asn	Glu	Leu	Val	*							
			100					105								

<210> 47

<211> 105

<212> PRT

<213> Homo Sapien

<400> 47

Met	Val	Lys	Gln	Ile	Glu	Ser	Lys	Thr	Ala	Phe	Gln	Glu	Ala	Leu	Asp	
1				5					10					15		
Ala	Ala	Gly	Asp	Lys	Leu	Val	Val	Val	Asp	Phe	Ser	Ala	Thr	Trp	Cys	
			20					25					30			
Gly	Pro	Cys	Lys	Met	Ile	Lys	Pro	Phe	Phe	His	Ser	Leu	Ser	Glu	Lys	
		35					40					45				
Tyr	Ser	Asn	Val	Ile	Phe	Leu	Glu	Val	Asp	Val	Asp	Asp	Cys	Gln	Asp	
	50					55					60					
Val	Ala	Ser	Glu	Cys	Glu	Val	Lys	Cys	Met	Pro	Thr	Phe	Gln	Phe	Phe	
65					70				75						80	
Lys	Lys	Gly	Gln	Lys	Val	Gly	Glu	Phe	Ser	Gly	Ala	Asn	Lys	Glu	Lys	
				85					90					95		
Leu	Glu	Ala	Thr	Ile	Asn	Glu	Leu	Val								
			100					105								

<210> 48

<211> 1494

<212> DNA

<213> Homo sapien

<220>

<221> CDS

<222> (1) ... (1494)

<400> 48

atg aac ggc cct gaa gat ctt ccc aag tcc tat gac tat gac ctt atc	48
Met Asn Gly Pro Glu Asp Leu Pro Lys Ser Tyr Asp Tyr Asp Leu Ile	
1 5 10 15	
atc att gga ggt ggc tca gga ggt ctg gca gct gct aag gag cca gcc	96
Ile Ile Gly Gly Gly Ser Gly Gly Leu Ala Ala Ala Lys Glu Pro Ala	
20 25 30	
caa tat ggc aag aag gtg atg gtc ctg gac ttt ggc act ccc acc cct	144
Gln Tyr Gly Lys Lys Val Met Val Leu Asp Phe Gly Thr Pro Thr Pro	
35 40 45	
ctt gga act aga tgg ggt ctt gga gga aca tgt gtg aat gtg ggt tgc	192
Leu Gly Thr Arg Trp Gly Leu Gly Gly Thr Cys Val Asn Val Gly Cys	
50 55 60	
ata cct aaa aaa ctg atg cat caa gca gct ttg tta gga caa gcc ctg	240
Ile Pro Lys Lys Leu Met His Gln Ala Ala Leu Leu Gly Gln Ala Leu	
65 70 75 80	
caa gac tct cga aat tat gga tgg aaa gtc gag gag aca gtt aag cat	288
Gln Asp Ser Arg Asn Tyr Gly Trp Lys Val Glu Glu Thr Val Lys His	
85 90 95	
gat tgg gac aga atg ata gaa gct gta cag aat cac att ggc tct ttg	336
Asp Trp Asp Arg Met Ile Glu Ala Val Gln Asn His Ile Gly Ser Leu	
100 105 110	
aat tgg ggc tac cga gta gct ctg cgg gag aaa aaa gtc gtc tat gag	384
Asn Trp Gly Tyr Arg Val Ala Leu Arg Glu Lys Lys Val Val Tyr Glu	
115 120 125	
aat gct tat ggg caa ttt att ggt cct cac agg att aag gca aca aat	432
Asn Ala Tyr Gly Gln Phe Ile Gly Pro His Arg Ile Lys Ala Thr Asn	
130 135 140	
aat aaa ggc aaa gaa aaa att tat tca gca gag aga ttt ctc att gcc	480
Asn Lys Gly Lys Glu Lys Ile Tyr Ser Ala Glu Arg Phe Leu Ile Ala	
145 150 155 160	
act ggt gaa aga cca cgt tac ttg ggc atc cct ggt gac aaa gaa tac	528
Thr Gly Glu Arg Pro Arg Tyr Leu Gly Ile Pro Gly Asp Lys Glu Tyr	
165 170 175	
tgc atc agc agt gat gat ctt ttc tcc ttg cct tac tgc ccg ggt aag	576
Cys Ile Ser Ser Asp Asp Leu Phe Ser Leu Pro Tyr Cys Pro Gly Lys	
180 185 190	
aca ctg gtt gtt gga gca tcc tat gtc gct ttg gag tgc gct gga ttt	624
Thr Leu Val Val Gly Ala Ser Val Ala Leu Glu Cys Ala Gly Phe	
195 200 205	
ctt gct ggt att ggt tta gac gtc act gtt atg gtt agg tcc att ctt	672
Leu Ala Gly Ile Gly Leu Asp Val Thr Val Met Val Arg Ser Ile Leu	
210 215 220	
ctt aga gga ttt gac cag gac atg gcc aac aaa att ggt gaa cac atg	720
Leu Arg Gly Phe Asp Gln Asp Met Ala Asn Lys Ile Gly Glu His Met	
225 230 235 240	
gaa gaa cat ggc atc aag ttt ata aga cag ttc gta cca att aaa gtt	768
Glu Glu His Gly Ile Lys Phe Ile Arg Gln Phe Val Pro Ile Lys Val	
245 250 255	
gaa caa att gaa gca ggg aca cca ggc cga ctc aga gta gta gct cag	816
Glu Gln Ile Glu Ala Gly Thr Pro Gly Arg Leu Arg Val Val Ala Gln	

260					265					270						
tcc	acc	aat	agt	gag	gaa	atc	att	gaa	gga	gaa	tat	aat	acg	gtg	atg	864
Ser	Thr	Asn	Ser	Glu	Glu	Ile	Ile	Glu	Gly	Glu	Tyr	Asn	Thr	Val	Met	
		275					280					285				
ctg	gca	ata	gga	aga	gat	gct	tgc	aca	aga	aaa	att	ggc	tta	gaa	acc	912
Leu	Ala	Ile	Gly	Arg	Asp	Ala	Cys	Thr	Arg	Lys	Ile	Gly	Leu	Glu	Thr	
	290					295					300					
gta	ggg	gtg	aag	ata	aat	gaa	aag	act	gga	aaa	ata	cct	gtc	aca	gat	960
Val	Gly	Val	Lys	Ile	Asn	Glu	Lys	Thr	Gly	Lys	Ile	Pro	Val	Thr	Asp	
305					310					315					320	
gaa	gaa	cag	acc	aat	gtg	cct	tac	atc	tat	gcc	att	ggc	gat	ata	ttg	1008
Glu	Glu	Gln	Thr	Asn	Val	Pro	Tyr	Ile	Tyr	Ala	Ile	Gly	Asp	Ile	Leu	
				325					330					335		
gag	gat	aag	gtg	gag	ctc	acc	cca	gtt	gca	atc	cag	gca	gga	aga	ttg	1056
Glu	Asp	Lys	Val	Glu	Leu	Thr	Pro	Val	Ala	Ile	Gln	Ala	Gly	Arg	Leu	
			340					345					350			
ctg	gct	cag	agg	ctc	tat	gca	ggc	tcc	act	gtc	aag	tgt	gac	tat	gaa	1104
Leu	Ala	Gln	Arg	Leu	Tyr	Ala	Gly	Ser	Thr	Val	Lys	Cys	Asp	Tyr	Glu	
		355					360					365				
aat	gtt	cca	acc	act	gta	ttt	act	cct	ttg	gaa	tat	ggc	gct	tgt	ggc	1152
Asn	Val	Pro	Thr	Thr	Val	Phe	Thr	Pro	Leu	Glu	Tyr	Gly	Ala	Cys	Gly	
	370					375					380					
ctt	tct	gag	gag	aaa	gct	gtg	gag	aag	ttt	ggg	gaa	gaa	aat	att	gag	1200
Leu	Ser	Glu	Glu	Lys	Glu	Val	Glu	Lys	Phe	Gly	Glu	Glu	Asn	Ile	Glu	
385					390					395					400	
gtt	tac	cat	agt	tac	ttt	tgg	cca	ttg	gaa	tgg	acg	att	ccg	tca	aga	1248
Val	Tyr	His	Ser	Tyr	Phe	Trp	Pro	Leu	Glu	Trp	Thr	Ile	Pro	Ser	Arg	
				405				410						415		
gat	aac	aac	aaa	tgt	tat	gca	aaa	ata	atc	tgt	aat	act	aaa	gac	aat	1296
Asp	Asn	Asn	Lys	Cys	Tyr	Ala	Lys	Ile	Ile	Cys	Asn	Thr	Lys	Asp	Asn	
			420					425					430			
gaa	cgt	gtt	gtg	ggc	ttt	cac	gta	ctg	ggc	cca	aat	gct	gga	gaa	gtt	1344
Glu	Arg	Val	Val	Gly	Phe	His	Val	Leu	Gly	Pro	Asn	Ala	Gly	Glu	Val	
		435					440					445				
aca	caa	ggc	ttt	gca	gct	gcg	ctc	aaa	tgt	gga	ctg	acc	aaa	aag	cag	1392
Thr	Gln	Gly	Phe	Ala	Ala	Ala	Leu	Lys	Cys	Gly	Leu	Thr	Lys	Lys	Gln	
	450					455					460					
ctg	gac	agc	aca	att	gga	atc	cac	cct	gtc	tgt	gca	gag	gta	ttc	aca	1440
Leu	Asp	Ser	Thr	Ile	Gly	Ile	His	Pro	Val	Cys	Ala	Glu	Val	Phe	Thr	
465					470					475					480	
aca	ttg	tct	gtg	acc	aag	cgc	tct	ggg	gca	agc	atc	ctc	cag	gct	ggc	1488
Thr	Leu	Ser	Val	Thr	Lys	Arg	Ser	Gly	Ala	Ser	Ile	Leu	Gln	Ala	Gly	
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tgc	tga															1494
Cys	*															

<210> 49  
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 <212> PRT  
 <213> Homo sapien

<400> 49

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		20						25					30		
Gln	Tyr	Gly	Lys	Lys	Val	Met	Val	Leu	Asp	Phe	Gly	Thr	Pro	Thr	Pro
		35					40					45			
Leu	Gly	Thr	Arg	Trp	Gly	Leu	Gly	Gly	Thr	Cys	Val	Asn	Val	Gly	Cys
	50					55					60				
Ile	Pro	Lys	Lys	Leu	Met	His	Gln	Ala	Ala	Leu	Gly	Gln	Ala	Leu	
65					70					75				80	
Gln	Asp	Ser	Arg	Asn	Tyr	Gly	Trp	Lys	Val	Glu	Glu	Thr	Val	Lys	His
				85					90					95	
Asp	Trp	Asp	Arg	Met	Ile	Glu	Ala	Val	Gln	Asn	His	Ile	Gly	Ser	Leu
			100					105					110		
Asn	Trp	Gly	Tyr	Arg	Val	Ala	Leu	Arg	Glu	Lys	Lys	Val	Val	Tyr	Glu
		115					120					125			
Asn	Ala	Tyr	Gly	Gln	Phe	Ile	Gly	Pro	His	Arg	Ile	Lys	Ala	Thr	Asn
	130					135					140				
Asn	Lys	Gly	Lys	Glu	Lys	Ile	Tyr	Ser	Ala	Glu	Arg	Phe	Leu	Ile	Ala
145					150					155					160
Thr	Gly	Glu	Arg	Pro	Arg	Tyr	Leu	Gly	Ile	Pro	Gly	Asp	Lys	Glu	Tyr
				165				170						175	
Cys	Ile	Ser	Ser	Asp	Asp	Leu	Phe	Ser	Leu	Pro	Tyr	Cys	Pro	Gly	Lys
			180					185					190		
Thr	Leu	Val	Val	Gly	Ala	Ser	Tyr	Val	Ala	Leu	Glu	Cys	Ala	Gly	Phe
		195					200					205			
Leu	Ala	Gly	Ile	Gly	Leu	Asp	Val	Thr	Val	Met	Val	Arg	Ser	Ile	Leu
	210					215					220				
Leu	Arg	Gly	Phe	Asp	Gln	Asp	Met	Ala	Asn	Lys	Ile	Gly	Glu	His	Met
225					230					235					240
Glu	Glu	His	Gly	Ile	Lys	Phe	Ile	Arg	Gln	Phe	Val	Pro	Ile	Lys	Val
				245					250					255	
Glu	Gln	Ile	Glu	Ala	Gly	Thr	Pro	Gly	Arg	Leu	Arg	Val	Val	Ala	Gln
			260					265					270		
Ser	Thr	Asn	Ser	Glu	Glu	Ile	Ile	Glu	Gly	Glu	Tyr	Asn	Thr	Val	Met
		275					280					285			
Leu	Ala	Ile	Gly	Arg	Asp	Ala	Cys	Thr	Arg	Lys	Ile	Gly	Leu	Glu	Thr
	290					295					300				
Val	Gly	Val	Lys	Ile	Asn	Glu	Lys	Thr	Gly	Lys	Ile	Pro	Val	Thr	Asp
305					310					315					320
Glu	Glu	Gln	Thr	Asn	Val	Pro	Tyr	Ile	Tyr	Ala	Ile	Gly	Asp	Ile	Leu
				325					330					335	
Glu	Asp	Lys	Val	Glu	Leu	Thr	Pro	Val	Ala	Ile	Gln	Ala	Gly	Arg	Leu
			340					345					350		
Leu	Ala	Gln	Arg	Leu	Tyr	Ala	Gly	Ser	Thr	Val	Lys	Cys	Asp	Tyr	Glu
		355					360					365			
Asn	Val	Pro	Thr	Thr	Val	Phe	Thr	Pro	Leu	Glu	Tyr	Gly	Ala	Cys	Gly
	370					375					380				
Leu	Ser	Glu	Glu	Lys	Ala	Val	Glu	Lys	Phe	Gly	Glu	Glu	Asn	Ile	Glu
385					390					395					400
Val	Tyr	His	Ser	Tyr	Phe	Trp	Pro	Leu	Glu	Trp	Thr	Ile	Pro	Ser	Arg
				405					410					415	
Asp	Asn	Asn	Lys	Cys	Tyr	Ala	Lys	Ile	Ile	Cys	Asn	Thr	Lys	Asp	Asn
			420					425					430		
Glu	Arg	Val	Val	Gly	Phe	His	Val	Leu	Gly	Pro	Asn	Ala	Gly	Glu	Val
		435					440					445			
Thr	Gln	Gly	Phe	Ala	Ala	Ala	Leu	Lys	Cys	Gly	Leu	Thr	Lys	Lys	Gln
	450					455					460				
Leu	Asp	Ser	Thr	Ile	Gly	Ile	His	Pro	Val	Cys	Ala	Glu	Val	Phe	Thr
465					470					475					480
Thr	Leu	Ser	Val	Thr	Lys	Arg	Ser	Gly	Ala	Ser	Ile	Leu	Gln	Ala	Gly
				485					490					495	

Cys

<210> 50  
 <211> 1377  
 <212> DNA  
 <213> Mycobacterium leprae

<220>  
 <221> CDS  
 <222> (1)...(1377)

<400> 50  
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att ggc tcc ggt cca gca ggc tac act gct gcc ctg tac gcc gct cgt 96  
 Ile Gly Ser Gly Pro Ala Gly Tyr Thr Ala Ala Leu Tyr Ala Ala Arg  
 20 25 30

gca cag cta aca ccg ctg gta ttt gag ggt acc tca ttc ggc ggc gcg 144  
 Ala Gln Leu Thr Pro Leu Val Phe Glu Gly Thr Ser Phe Gly Gly Ala  
 35 40 45

ctg atg acc acc acc gag gtg gaa aac tac cca ggt ttt cgc aac ggc 192  
 Leu Met Thr Thr Thr Glu Val Glu Asn Tyr Pro Gly Phe Arg Asn Gly  
 50 55 60

ata acc ggc ccg gag ttg atg gac gat atg cgt gaa cag gca ctg cga 240  
 Ile Thr Gly Pro Glu Leu Met Asp Asp Met Arg Glu Gln Ala Leu Arg  
 65 70 75 80

ttc ggc gcg gaa ctg cgg acc gaa gac gtc gag tcg gta tca ttg cgt 288  
 Phe Gly Ala Glu Leu Arg Thr Glu Asp Val Glu Ser Val Ser Leu Arg  
 85 90 95

ggc ccg atc aaa tcg gtc gtc acc gct gaa gga cag act tat cag gcc 336  
 Gly Pro Ile Lys Ser Val Val Thr Ala Glu Gly Gln Thr Tyr Gln Ala  
 100 105 110

cga gcc gtc atc ctc gcc atg ggt acc tcc gtg cgt tat cta cag atc 384  
 Arg Ala Val Ile Leu Ala Met Gly Thr Ser Val Arg Tyr Leu Gln Ile  
 115 120 125

ccc ggc gag caa gaa ttg cta gga cgt ggc gtg agt gca tgc gcg acc 432  
 Pro Gly Glu Gln Glu Leu Leu Gly Arg Gly Val Ser Ala Cys Ala Thr  
 130 135 140

tgc gac ggg tcc ttt ttc cgc ggc caa gac att gcc gtc att ggc ggt 480  
 Cys Asp Gly Ser Phe Phe Arg Gly Gln Asp Ile Ala Val Ile Gly Gly  
 145 150 155 160

gga gac tca gcg atg gag gaa gcc ctc ttt ttg acc cgg ttc gcc cgc 528  
 Gly Asp Ser Ala Met Glu Glu Ala Leu Phe Leu Thr Arg Phe Ala Arg  
 165 170 175

agc gtc acg ctc gtg cac cgc cgc gac gaa ttc cga gct tct aag atc 576  
 Ser Val Thr Leu Val His Arg Arg Asp Glu Phe Arg Ala Ser Lys Ile  
 180 185 190

atg ctc ggt cgc gcc cgt aac aat gac aag atc aaa ttc atc acc aac 624  
 Met Leu Gly Arg Ala Arg Asn Asn Asp Lys Ile Lys Phe Ile Thr Asn  
 195 200 205

cac acc gtg gtc gcg gtg aac ggc tat aca aca gtg acc gga ttg cgg 672  
 His Thr Val Val Ala Val Asn Gly Tyr Thr Thr Val Thr Gly Leu Arg  
 210 215 220

ttg cgt aac acc aca acg gga gag gaa acc acg cta gta gtg acc ggg 720

Leu	Arg	Asn	Thr	Thr	Thr	Gly	Glu	Glu	Thr	Thr	Leu	Val	Val	Thr	Gly	
225					230					235					240	
ggt	ttt	ggt	gca	att	ggc	cat	gaa	cca	cgt	tcc	agc	ctg	gtg	agc	gat	768
Val	Phe	Val	Ala	Ile	Gly	His	Glu	Pro	Arg	Ser	Ser	Leu	Val	Ser	Asp	
				245					250					255		
gtc	gtc	gac	ata	gac	ccg	gat	ggc	tac	gtc	ctg	gtg	aaa	gga	cgt	acg	816
Val	Val	Asp	Ile	Asp	Pro	Asp	Gly	Tyr	Val	Leu	Val	Lys	Gly	Arg	Thr	
			260					265					270			
acg	agt	aca	tgc	atg	gac	ggc	gtt	ttt	gcg	gcc	ggc	gac	ctg	gta	gat	864
Thr	Ser	Thr	Ser	Met	Asp	Gly	Val	Phe	Ala	Ala	Gly	Asp	Leu	Val	Asp	
		275					280					285				
cgc	acc	tac	cgg	cag	gcg	atc	act	gcc	gca	ggc	agt	ggc	tgt	gcc	gcc	912
Arg	Thr	Tyr	Arg	Gln	Ala	Ile	Thr	Ala	Ala	Gly	Ser	Gly	Cys	Ala	Ala	
	290					295					300					
gcc	atc	gac	gcc	gaa	cgt	tgg	ttg	gcg	gag	cat	gcc	ggg	tca	aaa	gct	960
Ala	Ile	Asp	Ala	Glu	Arg	Trp	Leu	Ala	Glu	His	Ala	Gly	Ser	Lys	Ala	
305					310					315					320	
aac	gaa	aca	aca	gag	gaa	act	gga	gac	gtt	gac	agt	acc	gac	aca	acc	1008
Asn	Glu	Thr	Thr	Glu	Glu	Thr	Gly	Asp	Val	Asp	Ser	Thr	Asp	Thr	Thr	
				325					330					335		
gat	tgg	agc	act	gcg	atg	act	gac	gcc	aag	aac	gcc	ggg	gtc	aca	ata	1056
Asp	Trp	Ser	Thr	Ala	Met	Thr	Asp	Ala	Lys	Asn	Ala	Gly	Val	Thr	Ile	
			340					345					350			
gaa	gtg	acc	gat	gct	tcc	ttt	ttc	gca	gac	gtc	tta	tcc	agt	aat	aag	1104
Glu	Val	Thr	Asp	Ala	Ser	Phe	Phe	Ala	Asp	Val	Leu	Ser	Ser	Asn	Lys	
		355					360					365				
cct	gtg	tta	gtt	gat	ttt	tgg	gca	aca	tgg	tgt	gga	ccc	tgc	aag	atg	1152
Pro	Val	Leu	Val	Asp	Phe	Trp	Ala	Thr	Trp	Cys	Gly	Pro	Cys	Lys	Met	
	370					375					380					
gta	gcg	ccg	gta	ctc	gaa	gag	atc	gcg	tcc	gaa	caa	cga	aac	cag	ctc	1200
Val	Ala	Pro	Val	Leu	Glu	Glu	Ile	Ala	Ser	Glu	Gln	Arg	Asn	Gln	Leu	
385					390					395					400	
act	gtc	gcc	aag	tta	gat	gta	gac	acc	aac	ccg	gaa	atg	gca	cgc	gag	1248
Thr	Val	Ala	Lys	Leu	Asp	Val	Asp	Thr	Asn	Pro	Glu	Met	Ala	Arg	Glu	
				405				410						415		
ttc	cag	gtc	gtg	tgc	ata	ccc	aca	atg	att	ctg	ttc	cag	ggc	ggc	caa	1296
Phe	Gln	Val	Val	Ser	Ile	Pro	Thr	Met	Ile	Leu	Phe	Gln	Gly	Gly	Gln	
			420					425					430			
cca	gta	aaa	cgc	atc	gtt	ggc	gct	aag	ggc	aaa	gca	gcg	tta	cta	cgt	1344
Pro	Val	Lys	Arg	Ile	Val	Gly	Ala	Lys	Gly	Lys	Ala	Ala	Leu	Leu	Arg	
		435				440						445				
gac	ctt	tcc	gac	gtg	gta	cct	aac	ctc	aat	tag						1377
Asp	Leu	Ser	Asp	Val	Val	Pro	Asn	Leu	Asn	*						
	450					455										

<210> 51  
 <211> 458  
 <212> PRT  
 <213> Mycobacterium leprae

<400> 51  
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			20					25					30				
Ala	Gln	Leu	Thr	Pro	Leu	Val	Phe	Glu	Gly	Thr	Ser	Phe	Gly	Gly	Ala		
		35					40					45					
Leu	Met	Thr	Thr	Thr	Glu	Val	Glu	Asn	Tyr	Pro	Gly	Phe	Arg	Asn	Gly		
	50					55					60						
Ile	Thr	Gly	Pro	Glu	Leu	Met	Asp	Asp	Met	Arg	Glu	Gln	Ala	Leu	Arg		
65					70					75				80			
Phe	Gly	Ala	Glu	Leu	Arg	Thr	Glu	Asp	Val	Glu	Ser	Val	Ser	Leu	Arg		
				85					90					95			
Gly	Pro	Ile	Lys	Ser	Val	Val	Thr	Ala	Glu	Gly	Gln	Thr	Tyr	Gln	Ala		
			100					105					110				
Arg	Ala	Val	Ile	Leu	Ala	Met	Gly	Thr	Ser	Val	Arg	Tyr	Leu	Gln	Ile		
		115					120					125					
Pro	Gly	Glu	Gln	Glu	Leu	Leu	Gly	Arg	Gly	Val	Ser	Ala	Cys	Ala	Thr		
	130					135					140						
Cys	Asp	Gly	Ser	Phe	Phe	Arg	Gly	Gln	Asp	Ile	Ala	Val	Ile	Gly	Gly		
145					150					155				160			
Gly	Asp	Ser	Ala	Met	Glu	Glu	Ala	Leu	Phe	Leu	Thr	Arg	Phe	Ala	Arg		
				165					170					175			
Ser	Val	Thr	Leu	Val	His	Arg	Arg	Asp	Glu	Phe	Arg	Ala	Ser	Lys	Ile		
			180					185					190				
Met	Leu	Gly	Arg	Ala	Arg	Asn	Asn	Asp	Lys	Ile	Lys	Phe	Ile	Thr	Asn		
		195					200					205					
His	Thr	Val	Val	Ala	Val	Asn	Gly	Tyr	Thr	Thr	Val	Thr	Gly	Leu	Arg		
	210					215						220					
Leu	Arg	Asn	Thr	Thr	Thr	Gly	Glu	Glu	Thr	Thr	Leu	Val	Val	Thr	Gly		
225					230					235				240			
Val	Phe	Val	Ala	Ile	Gly	His	Glu	Pro	Arg	Ser	Ser	Leu	Val	Ser	Asp		
			245						250					255			
Val	Val	Asp	Ile	Asp	Pro	Asp	Gly	Tyr	Val	Leu	Val	Lys	Gly	Arg	Thr		
		260						265					270				
Thr	Ser	Thr	Ser	Met	Asp	Gly	Val	Phe	Ala	Ala	Gly	Asp	Leu	Val	Asp		
		275					280					285					
Arg	Thr	Tyr	Arg	Gln	Ala	Ile	Thr	Ala	Ala	Gly	Ser	Gly	Cys	Ala	Ala		
	290					295					300						
Ala	Ile	Asp	Ala	Glu	Arg	Trp	Leu	Ala	Glu	His	Ala	Gly	Ser	Lys	Ala		
305					310					315				320			
Asn	Glu	Thr	Thr	Glu	Glu	Thr	Gly	Asp	Val	Asp	Ser	Thr	Asp	Thr	Thr		
			325						330					335			
Asp	Trp	Ser	Thr	Ala	Met	Thr	Asp	Ala	Lys	Asn	Ala	Gly	Val	Thr	Ile		
		340						345					350				
Glu	Val	Thr	Asp	Ala	Ser	Phe	Phe	Ala	Asp	Val	Leu	Ser	Ser	Asn	Lys		
		355					360					365					
Pro	Val	Leu	Val	Asp	Phe	Trp	Ala	Thr	Trp	Cys	Gly	Pro	Cys	Lys	Met		
	370					375					380						
Val	Ala	Pro	Val	Leu	Glu	Ile	Ala	Ser	Glu	Gln	Arg	Asn	Gln	Leu			
385					390				395					400			
Thr	Val	Ala	Lys	Leu	Asp	Val	Asp	Thr	Asn	Pro	Glu	Met	Ala	Arg	Glu		
			405						410					415			
Phe	Gln	Val	Val	Ser	Ile	Pro	Thr	Met	Ile	Leu	Phe	Gln	Gly	Gly	Gln		
			420					425					430				
Pro	Val	Lys	Arg	Ile	Val	Gly	Ala	Lys	Gly	Lys	Ala	Ala	Leu	Leu	Arg		
		435					440					445					
Asp	Leu	Ser	Asp	Val	Val	Pro	Asn	Leu	Asn								
	450					455											

<210> 52  
 <211> 178  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 52  
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Ser	Gly	Val	Pro	Thr	Thr	Lys	Ile	Gly	Phe	Cys	Ser	Leu	Asp	Ser	Arg
		35					40					45			
Lys	Arg	Gly	Asp	Ser	Ser	Val	Val	Arg	Cys	Ser	Leu	Glu	Thr	Val	Asn
		50				55					60				
Val	Ser	Val	Gly	Gln	Val	Thr	Glu	Val	Asp	Lys	Asp	Thr	Phe	Trp	Pro
65					70				75						80
Ile	Val	Lys	Ala	Ala	Gly	Glu	Lys	Leu	Val	Val	Leu	Asp	Met	Tyr	Thr
			85					90					95		
Gln	Trp	Cys	Gly	Pro	Cys	Lys	Val	Ile	Ala	Pro	Lys	Tyr	Lys	Ala	Leu
			100					105					110		
Ser	Glu	Lys	Tyr	Asp	Asp	Val	Val	Phe	Leu	Lys	Leu	Asp	Cys	Asn	Pro
		115					120					125			
Asp	Asn	Arg	Pro	Leu	Pro	Lys	Glu	Leu	Gly	Ile	Arg	Val	Val	Pro	Thr
		130				135					140				
Phe	Lys	Ile	Leu	Lys	Asp	Asn	Lys	Val	Val	Lys	Glu	Val	Thr	Gly	Ala
145					150					155					160
Lys	Tyr	Asp	Asp	Leu	Val	Ala	Ala	Ile	Glu	Thr	Ala	Arg	Ser	Ala	Ala
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Ser	Gly														

<210> 53  
 <211> 185  
 <212> PRT  
 <213> Arabidopsis thaliana

Met	Pro	Leu	Ser	Leu	Arg	Leu	Ala	Pro	Ser	Pro	Thr	Ser	Phe	Arg	Tyr
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Ser	Pro	Ile	Thr	Ser	Thr	Gly	Ala	Gly	Gly	Phe	Ser	Pro	Val	Lys	Gln
			20					25					30		
His	Cys	Arg	Ile	Pro	Asn	Ser	Gly	Val	Ala	Thr	Lys	Ile	Gly	Phe	Cys
		35					40					45			
Ser	Gly	Gly	Gly	Gly	Val	Leu	Asp	Ser	Gly	Arg	Arg	Ile	Gly	Ser	Cys
		50				55					60				
Val	Val	Arg	Cys	Ser	Leu	Glu	Thr	Val	Asn	Val	Thr	Val	Gly	Gln	Val
65					70				75					80	
Thr	Glu	Val	Asp	Lys	Asp	Thr	Phe	Trp	Pro	Ile	Val	Lys	Ala	Ala	Gly
				85				90					95		
Asp	Lys	Ile	Val	Val	Leu	Asp	Met	Tyr	Thr	Gln	Trp	Cys	Gly	Pro	Cys
			100					105					110		
Lys	Val	Ile	Ala	Pro	Lys	Tyr	Lys	Glu	Leu	Ser	Glu	Lys	Tyr	Gln	Asp
			115				120					125			
Met	Val	Phe	Leu	Lys	Leu	Asp	Cys	Asn	Gln	Asp	Asn	Lys	Pro	Leu	Ala
					135						140				
Lys	Glu	Leu	Gly	Ile	Arg	Val	Val	Pro	Thr	Phe	Lys	Ile	Leu	Lys	Asp
145					150					155					160
Asn	Lys	Val	Val	Lys	Glu	Val	Thr	Gly	Ala	Lys	Tyr	Glu	Asp	Leu	Leu
				165					170					175	
Ala	Ala	Ile	Glu	Ala	Ala	Arg	Ser	Gly							
			180					185							

<210> 54  
 <211> 182  
 <212> PRT  
 <213> Brassica napus

Met	Pro	Leu	Ser	Leu	Arg	Leu	Ala	Pro	Ser	Pro	Thr	Ala	Leu	Ser	Pro
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Thr	Thr	Gly	Gly	Phe	Ser	Pro	Ala	Lys	Lys	Gln	Cys	Arg	Ile	Pro	Ser
			20					25					30		
Tyr	Ser	Gly	Val	Ala	Thr	Thr	Thr	Arg	Arg	Ile	Gly	Leu	Cys	Ser	Leu



		35					40					45					
Asp	Tyr	Val	Lys	Arg	Gly	Asp	Ser	Ser	Val	Val	Arg	Cys	Ser	Leu	Gln		
50						55					60						
Thr	Val	Asn	Val	Ser	Val	Gly	Gln	Val	Thr	Glu	Val	Asp	Lys	Asp	Thr		
65					70					75					80		
Phe	Trp	Pro	Ile	Val	Lys	Ala	Ala	Gly	Glu	Lys	Ile	Val	Val	Leu	Asp		
				85					90					95			
Met	Tyr	Thr	Gln	Trp	Cys	Gly	Pro	Cys	Lys	Val	Ile	Ala	Pro	Lys	Tyr		
			100					105					110				
Lys	Ala	Leu	Ser	Glu	Lys	Tyr	Glu	Asp	Val	Val	Phe	Leu	Lys	Leu	Asp		
		115					120					125					
Cys	Asn	Pro	Glu	Asn	Arg	Pro	Leu	Ala	Lys	Glu	Leu	Gly	Ile	Arg	Val		
	130					135					140						
Val	Pro	Thr	Phe	Lys	Ile	Leu	Lys	Asp	Asn	Gln	Val	Val	Lys	Glu	Val		
145					150					155					160		
Thr	Gly	Ala	Lys	Tyr	Asp	Asp	Leu	Val	Ala	Ala	Ile	Glu	Thr	Ala	Arg		
				165					170					175			
Ser	Ala	Ser	Ser	Ser	Gly												
			180														

<210> 55  
 <211> 191  
 <212> PRT  
 <213> Mesembryanthemum crystallinum

Met	Ala	Met	Gln	Leu	Ser	Leu	Ser	His	Gln	Ser	Trp	Ala	Lys	Ser	Leu		
1				5					10					15			
Ala	Ser	Pro	Ile	Thr	Ser	Phe	Asp	Pro	Ala	Arg	Ser	Pro	Pro	Lys	Arg		
			20				25					30					
Val	Glu	Leu	Gly	Pro	Asn	Cys	Leu	Asn	Gly	Gly	Ala	Thr	Ala	Gly	Lys		
		35					40					45					
Leu	Met	Arg	Glu	Lys	Val	Gly	Glu	Arg	Met	Arg	Met	Ser	Gly	Arg	Ser		
	50					55				60							
Cys	Cys	Val	Lys	Ala	Ser	Leu	Glu	Thr	Ala	Val	Gly	Ala	Glu	Ser	Glu		
65					70				75					80			
Thr	Leu	Val	Gly	Lys	Val	Thr	Glu	Val	Asp	Lys	Asp	Thr	Phe	Trp	Pro		
			85						90					95			
Ile	Ala	Asn	Gly	Ala	Gly	Asp	Lys	Pro	Val	Val	Leu	Asp	Met	Tyr	Thr		
		100					105						110				
Gln	Trp	Cys	Gly	Pro	Cys	Lys	Val	Met	Ala	Pro	Lys	Tyr	Gln	Glu	Leu		
		115					120					125					
Ala	Glu	Lys	Leu	Leu	Asp	Val	Val	Phe	Leu	Lys	Leu	Asp	Cys	Asn	Gln		
	130					135					140						
Glu	Asn	Lys	Pro	Leu	Ala	Lys	Glu	Leu	Gly	Ile	Arg	Val	Val	Pro	Thr		
145					150					155					160		
Phe	Lys	Ile	Leu	Lys	Gly	Gly	Lys	Ile	Val	Asp	Glu	Val	Thr	Gly	Ala		
			165						170					175			
Lys	Phe	Asp	Lys	Leu	Val	Ala	Ala	Ile	Glu	Ala	Ala	Arg	Ser	Ser			
			180					185					190				

<210> 56  
 <211> 182  
 <212> PRT  
 <213> Pisum sativum

Met	Ala	Leu	Asn	Leu	Cys	Thr	Ser	Pro	Lys	Trp	Ile	Gly	Thr	Thr	Val		
1				5					10					15			
Phe	Asp	Ser	Ala	Ser	Ser	Ser	Lys	Pro	Ser	Leu	Ala	Ser	Ser	Phe	Ser		
			20					25					30				
Thr	Thr	Ser	Phe	Ser	Ser	Ser	Ile	Leu	Cys	Ser	Lys	Arg	Val	Gly	Leu		
		35					40					45					
Gln	Arg	Leu	Ser	Leu	Arg	Arg	Ser	Ile	Ser	Val	Ser	Val	Arg	Ser	Ser		
	50						55				60						

Leu Glu Thr Ala Gly Pro Thr Val Thr Val Gly Lys Val Thr Glu Val  
 65 70 75 80  
 Asn Lys Asp Thr Phe Trp Pro Ile Val Asn Ala Ala Gly Asp Lys Thr  
 85 90 95  
 Val Val Leu Asp Met Phe Thr Lys Trp Cys Gly Pro Cys Lys Val Ile  
 100 105 110  
 Ala Pro Leu Tyr Glu Glu Leu Ser Gln Lys Tyr Leu Asp Val Val Phe  
 115 120 125  
 Leu Lys Leu Asp Cys Asn Gln Asp Asn Lys Ser Leu Ala Lys Glu Leu  
 130 135 140  
 Gly Ile Lys Val Val Pro Thr Phe Lys Ile Leu Lys Asp Asn Lys Ile  
 145 150 155 160  
 Val Lys Glu Val Thr Gly Ala Lys Phe Asp Asp Leu Val Ala Ala Ile  
 165 170 175  
 Asp Thr Val Arg Ser Ser  
 180

<210> 57  
 <211> 190  
 <212> PRT  
 <213> Spinacia oleracea

<400> 57  
 Met Ala Leu His Leu Ser Leu Ser His Gln Ser Trp Thr Ser Pro Ala  
 1 5 10 15  
 His Pro Ile Thr Ser Ser Asp Pro Thr Arg Ser Ser Val Pro Gly Thr  
 20 25 30  
 Gly Leu Ser Arg Arg Val Asp Phe Leu Gly Ser Cys Lys Ile Asn Gly  
 35 40 45  
 Val Phe Val Val Lys Arg Lys Asp Arg Arg Arg Met Arg Gly Gly Glu  
 50 55 60  
 Val Arg Ala Ser Met Glu Gln Ala Leu Gly Thr Gln Glu Met Glu Ala  
 65 70 75 80  
 Ile Val Gly Lys Val Thr Glu Val Asn Lys Asp Thr Phe Trp Pro Ile  
 85 90 95  
 Val Lys Ala Ala Gly Asp Lys Pro Val Leu Asp Met Phe Thr Gln  
 100 105 110  
 Trp Cys Gly Pro Cys Lys Ala Met Ala Pro Lys Tyr Glu Lys Leu Ala  
 115 120 125  
 Glu Glu Tyr Leu Asp Val Ile Phe Leu Lys Leu Asp Cys Asn Gln Glu  
 130 135 140  
 Asn Lys Thr Leu Ala Lys Glu Leu Gly Ile Arg Val Val Pro Thr Phe  
 145 150 155 160  
 Lys Ile Leu Lys Glu Asn Ser Val Val Gly Glu Val Thr Gly Ala Lys  
 165 170 175  
 Tyr Asp Lys Leu Leu Glu Ala Ile Gln Ala Ala Arg Ser Ser  
 180 185 190

<210> 58  
 <211> 106  
 <212> PRT  
 <213> Anabaena

<400> 58  
 Ser Ala Ala Ala Gln Val Thr Asp Ser Thr Phe Lys Gln Glu Val Leu  
 1 5 10 15  
 Asp Ser Asp Val Pro Val Leu Val Asp Phe Trp Ala Pro Trp Cys Gly  
 20 25 30  
 Pro Cys Arg Met Val Ala Pro Val Val Asp Glu Ile Ala Gln Gln Tyr  
 35 40 45  
 Glu Gly Lys Ile Lys Val Val Lys Val Asn Thr Asp Glu Asn Pro Gln  
 50 55 60  
 Val Ala Ser Gln Tyr Gly Ile Arg Ser Ile Pro Thr Leu Met Ile Phe  
 65 70 75 80  
 Lys Gly Gly Gln Lys Val Asp Met Val Val Gly Ala Val Pro Lys Thr

85 90 95  
 Thr Leu Ser Gln Thr Leu Glu Lys His Leu  
 100 105

<210> 59  
 <211> 179  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 59  
 Met Ala Ala Tyr Thr Cys Thr Ser Arg Pro Pro Ile Ser Ile Arg Ser  
 1 5 10 15  
 Glu Met Arg Ile Ala Ser Ser Pro Thr Gly Ser Phe Ser Thr Arg Gln  
 20 25 30  
 Met Phe Ser Val Leu Pro Glu Ser Ser Gly Leu Arg Thr Arg Val Ser  
 35 40 45  
 Leu Ser Ser Leu Ser Lys Asn Ser Arg Val Ser Arg Leu Arg Arg Gly  
 50 55 60  
 Val Ile Cys Glu Ala Gln Asp Thr Ala Thr Gly Ile Pro Val Val Asn  
 65 70 75 80  
 Asp Ser Thr Trp Asp Ser Leu Val Leu Lys Ala Asp Glu Pro Val Phe  
 85 90 95  
 Val Asp Phe Trp Ala Pro Trp Cys Gly Pro Cys Lys Met Ile Asp Pro  
 100 105 110  
 Ile Val Asn Glu Leu Ala Gln Lys Tyr Ala Gly Gln Phe Lys Phe Tyr  
 115 120 125  
 Lys Leu Asn Thr Asp Glu Ser Pro Ala Thr Pro Gly Gln Tyr Gly Val  
 130 135 140  
 Arg Ser Ile Pro Thr Ile Met Ile Phe Val Asn Gly Glu Lys Lys Asp  
 145 150 155 160  
 Thr Ile Ile Gly Ala Val Ser Lys Asp Thr Leu Ala Thr Ser Ile Asn  
 165 170 175  
 Lys Phe Leu

<210> 60  
 <211> 186  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 60  
 Met Ala Ala Phe Thr Cys Thr Ser Arg Pro Pro Ile Ser Leu Arg Ser  
 1 5 10 15  
 Glu Thr Arg Ile Val Ser Ser Ser Pro Ser Ala Ser Ser Leu Ser Ser  
 20 25 30  
 Arg Arg Met Phe Ala Val Leu Pro Glu Ser Ser Gly Leu Arg Ile Arg  
 35 40 45  
 Leu Ser Leu Ser Pro Ala Ser Leu Thr Ser Ile His Gln Pro Arg Val  
 50 55 60  
 Ser Arg Leu Arg Arg Ala Val Val Cys Glu Ala Gln Glu Thr Thr Thr  
 65 70 75 80  
 Asp Ile Gln Val Val Asn Asp Ser Thr Trp Asp Ser Leu Val Leu Lys  
 85 90 95  
 Ala Thr Gly Pro Val Val Val Asp Phe Trp Ala Pro Trp Cys Gly Pro  
 100 105 110  
 Cys Lys Met Ile Asp Pro Leu Val Asn Asp Leu Ala Gln His Tyr Thr  
 115 120 125  
 Gly Lys Ile Lys Phe Tyr Lys Leu Asn Thr Asp Glu Ser Pro Asn Thr  
 130 135 140  
 Pro Gly Gln Tyr Gly Val Arg Ser Ile Pro Thr Ile Met Ile Phe Val  
 145 150 155 160  
 Gly Gly Glu Lys Lys Asp Thr Ile Ile Gly Ala Val Pro Lys Thr Thr  
 165 170 175  
 Leu Thr Ser Ser Leu Asp Lys Phe Leu Pro  
 180 185

<210> 61  
 <211> 173  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 61  
 Met Ala Ile Ser Ser Ser Ser Ser Ser Ile Cys Phe Asn Pro Thr Arg  
 1 5 10 15  
 Phe His Thr Ala Arg His Ile Ser Ser Pro Ser Arg Leu Phe Pro Val  
 20 25 30  
 Thr Ser Phe Ser Pro Arg Ser Leu Arg Phe Ser Asp Arg Arg Ser Leu  
 35 40 45  
 Leu Ser Ser Ser Ala Ser Arg Leu Arg Leu Ser Pro Leu Cys Val Arg  
 50 55 60  
 Asp Ser Arg Ala Ala Glu Val Thr Gln Arg Ser Trp Glu Asp Ser Val  
 65 70 75 80  
 Leu Lys Ser Glu Thr Pro Val Leu Val Glu Phe Tyr Thr Ser Trp Cys  
 85 90 95  
 Gly Pro Cys Arg Met Val His Arg Ile Ile Asp Glu Ile Ala Gly Asp  
 100 105 110  
 Tyr Ala Gly Lys Leu Asn Cys Tyr Leu Leu Asn Ala Asp Asn Asp Leu  
 115 120 125  
 Pro Val Ala Glu Glu Tyr Glu Ile Lys Ala Val Pro Val Val Leu Leu  
 130 135 140  
 Phe Lys Asn Gly Glu Lys Arg Glu Ser Ile Met Gly Thr Met Pro Lys  
 145 150 155 160  
 Glu Phe Tyr Ile Ser Ala Ile Glu Arg Val Leu Asn Ser  
 165 170

<210> 62  
 <211> 193  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 62  
 Met Ala Ser Leu Leu Asp Ser Val Thr Val Thr Arg Val Phe Ser Leu  
 1 5 10 15  
 Pro Ile Ala Ala Ser Val Ser Ser Ser Ser Ala Ala Pro Ser Val Ser  
 20 25 30  
 Arg Arg Arg Ile Ser Pro Ala Arg Phe Leu Glu Phe Arg Gly Leu Lys  
 35 40 45  
 Ser Ser Arg Ser Leu Val Thr Gln Ser Ala Ser Leu Gly Ala Asn Arg  
 50 55 60  
 Arg Thr Arg Ile Ala Arg Gly Gly Arg Ile Ala Cys Glu Ala Gln Asp  
 65 70 75 80  
 Thr Thr Ala Ala Ala Val Glu Val Pro Asn Leu Ser Asp Ser Glu Trp  
 85 90 95  
 Gln Thr Lys Val Leu Glu Ser Asp Val Pro Val Leu Val Glu Phe Trp  
 100 105 110  
 Ala Pro Trp Cys Gly Pro Cys Arg Met Ile His Pro Ile Val Asp Gln  
 115 120 125  
 Leu Ala Lys Asp Phe Ala Gly Lys Phe Lys Phe Tyr Lys Ile Asn Thr  
 130 135 140  
 Asp Glu Ser Pro Asn Thr Pro Asn Arg Tyr Gly Ile Arg Ser Val Pro  
 145 150 155 160  
 Thr Val Ile Ile Phe Lys Gly Gly Glu Lys Lys Asp Ser Ile Ile Gly  
 165 170 175  
 Ala Val Pro Arg Glu Thr Leu Glu Lys Thr Ile Glu Arg Phe Leu Val  
 180 185 190  
 Glu

<210> 63  
 <211> 177

<212> PRT  
 <213> Brassica napus

<400> 63  
 Met Ala Ala Phe Thr Cys Thr Ser Ser Pro Pro Ile Ser Leu Arg Ser  
 1 5 10 15  
 Glu Met Met Ile Ala Ser Ser Lys Thr Val Ser Leu Ser Thr Arg Gln  
 20 25 30  
 Met Phe Ser Val Gly Gly Leu Arg Thr Arg Val Ser Leu Ser Ser Val  
 35 40 45  
 Ser Lys Asn Ser Arg Ala Ser Arg Leu Arg Arg Gly Gly Ile Ile Cys  
 50 55 60  
 Glu Ala Gln Asp Thr Ala Thr Gly Ile Pro Met Val Asn Asp Ser Thr  
 65 70 75 80  
 Trp Glu Ser Leu Val Leu Lys Ala Asp Glu Pro Val Val Val Asp Phe  
 85 90 95  
 Trp Ala Pro Trp Cys Gly Pro Cys Lys Met Ile Asp Pro Ile Val Asn  
 100 105 110  
 Glu Leu Ala Gln Gln Tyr Thr Gly Lys Ile Lys Phe Phe Lys Leu Asn  
 115 120 125  
 Thr Asp Asp Ser Pro Ala Thr Pro Gly Lys Tyr Gly Val Arg Ser Ile  
 130 135 140  
 Pro Thr Ile Met Ile Phe Val Lys Gly Glu Lys Lys Asp Thr Ile Ile  
 145 150 155 160  
 Gly Ala Val Pro Lys Thr Thr Leu Ala Thr Ser Ile Asp Lys Phe Leu  
 165 170 175  
 Gln

<210> 64  
 <211> 140  
 <212> PRT  
 <213> Chlamydomonas reinhardtii

<400> 64  
 Met Ala Leu Val Ala Arg Arg Ala Ala Val Pro Ser Ala Arg Ser Ser  
 1 5 10 15  
 Ala Arg Pro Ala Phe Ala Arg Ala Ala Pro Arg Arg Ser Val Val Val  
 20 25 30  
 Arg Ala Glu Ala Gly Ala Val Asn Asp Asp Thr Phe Lys Asn Val Val  
 35 40 45  
 Leu Glu Ser Ser Val Pro Val Leu Val Asp Phe Trp Ala Pro Trp Cys  
 50 55 60  
 Gly Pro Cys Arg Ile Ile Ala Pro Val Val Asp Glu Ile Ala Gly Glu  
 65 70 75 80  
 Tyr Lys Asp Lys Leu Lys Cys Val Lys Leu Asn Thr Asp Glu Ser Pro  
 85 90 95  
 Asn Val Ala Ser Glu Tyr Gly Ile Arg Ser Ile Pro Thr Ile Met Val  
 100 105 110  
 Phe Lys Gly Gly Lys Lys Cys Glu Thr Ile Ile Gly Ala Val Pro Lys  
 115 120 125  
 Ala Thr Ile Val Gln Thr Val Glu Lys Tyr Leu Asn  
 130 135 140

<210> 65  
 <211> 167  
 <212> PRT  
 <213> Zea mays

<400> 65  
 Met Ala Met Glu Thr Cys Phe Arg Ala Trp Ala Leu His Ala Pro Ala  
 1 5 10 15  
 Gly Ser Lys Asp Arg Leu Leu Val Gly Asn Leu Val Leu Pro Ser Lys  
 20 25 30  
 Arg Ala Leu Ala Pro Leu Ser Val Gly Arg Val Ala Thr Arg Arg Pro



Cys	Gly	Pro	Cys	Arg	Met	Ile	Ala	Pro	Ile	Ile	Asp	Glu	Leu	Ala	Lys
			100					105					110		
Glu	Tyr	Ala	Gly	Lys	Ile	Lys	Cys	Tyr	Lys	Leu	Asn	Thr	Asp	Glu	Ser
		115					120					125			
Pro	Asn	Thr	Ala	Thr	Lys	Tyr	Gly	Ile	Arg	Ser	Ile	Pro	Thr	Val	Leu
		130				135					140				
Phe	Phe	Lys	Asn	Gly	Glu	Arg	Lys	Asp	Ser	Val	Ile	Gly	Ala	Val	Pro
145				150						155					160
Lys	Ala	Thr	Leu	Ser	Glu	Lys	Val	Glu	Lys	Tyr	Ile				
			165						170						

<210> 68  
 <211> 181  
 <212> PRT  
 <213> Spinacia oleracea

<400> 68

Met	Ala	Ile	Glu	Asn	Cys	Leu	Gln	Leu	Ser	Thr	Ser	Ala	Ser	Val	Gly
1				5					10					15	
Thr	Val	Ala	Val	Lys	Ser	His	Val	His	Leu	Gln	Pro	Ser	Ser	Lys	
			20					25				30			
Val	Asn	Val	Pro	Thr	Phe	Arg	Gly	Leu	Lys	Arg	Ser	Phe	Pro	Ala	Leu
		35					40					45			
Ser	Ser	Ser	Val	Ser	Ser	Ser	Ser	Pro	Arg	Gln	Phe	Arg	Tyr	Ser	Ser
	50				55					60					
Val	Val	Cys	Lys	Ala	Ser	Glu	Ala	Val	Lys	Glu	Val	Gln	Asp	Val	Asn
65				70					75						80
Asp	Ser	Ser	Trp	Lys	Glu	Phe	Val	Leu	Glu	Ser	Glu	Val	Pro	Val	Met
			85					90					95		
Val	Asp	Phe	Trp	Ala	Pro	Trp	Cys	Gly	Pro	Cys	Lys	Leu	Ile	Ala	Pro
			100					105					110		
Val	Ile	Asp	Glu	Leu	Ala	Lys	Glu	Tyr	Ser	Gly	Lys	Ile	Ala	Val	Tyr
		115					120					125			
Lys	Leu	Asn	Thr	Asp	Glu	Ala	Pro	Gly	Ile	Ala	Thr	Gln	Tyr	Asn	Ile
		130				135					140				
Arg	Ser	Ile	Pro	Thr	Val	Leu	Phe	Phe	Lys	Asn	Gly	Glu	Arg	Lys	Glu
145					150					155					160
Ser	Ile	Ile	Gly	Ala	Val	Pro	Lys	Ser	Thr	Leu	Thr	Asp	Ser	Ile	Glu
			165						170					175	
Lys	Tyr	Leu	Ser	Pro											
			180												

<210> 69  
 <211> 175  
 <212> PRT  
 <213> Triticum aestivum

<400> 69

Met	Ala	Leu	Glu	Thr	Cys	Leu	Arg	Gly	Trp	Ala	Leu	Tyr	Ala	Pro	Gln
1				5					10					15	
Ala	Gly	Ile	Arg	Glu	Arg	Leu	Ser	Ser	Gly	Ser	Tyr	Ala	Pro	Ser	Arg
			20					25					30		
Pro	Arg	Thr	Ala	Ala	Pro	Ala	Val	Val	Ser	Pro	Ser	Pro	Tyr	Lys	Ser
		35					40					45			
Ala	Leu	Val	Ala	Ala	Arg	Arg	Pro	Ser	Arg	Phe	Val	Cys	Lys	Cys	Lys
	50				55					60					
Asn	Val	Val	Asp	Glu	Val	Ile	Val	Ala	Asp	Glu	Lys	Asn	Trp	Asp	Asn
65				70					75						80
Met	Val	Ile	Ala	Cys	Glu	Ser	Pro	Val	Leu	Val	Glu	Phe	Trp	Ala	Pro
			85					90					95		
Trp	Cys	Gly	Pro	Cys	Arg	Met	Ile	Ala	Pro	Val	Ile	Asp	Glu	Leu	Ala
			100					105					110		
Lys	Asp	Tyr	Val	Gly	Lys	Ile	Lys	Cys	Cys	Lys	Val	Asn	Thr	Asp	Asp
		115					120					125			
Cys	Pro	Asn	Ile	Ala	Ser	Thr	Tyr	Gly	Ile	Arg	Ser	Ile	Pro	Thr	Val

130						135						140				
Leu	Met	Phe	Lys	Asp	Gly	Glu	Lys	Lys	Glu	Ser	Val	Ile	Gly	Ala	Val	
145					150					155					160	
Pro	Lys	Thr	Thr	Leu	Cys	Thr	Ile	Ile	Asp	Lys	Tyr	Ile	Gly	Ser		
				165					170					175		

<210> 70  
 <211> 106  
 <212> PRT  
 <213> *Anacystis nidulans*

<400> 70																
Ser	Val	Ala	Ala	Ala	Val	Thr	Asp	Ala	Thr	Phe	Lys	Gln	Glu	Val	Leu	
1				5					10					15		
Glu	Ser	Ser	Ile	Pro	Val	Leu	Val	Asp	Phe	Trp	Ala	Pro	Trp	Cys	Gly	
			20					25					30			
Pro	Cys	Arg	Met	Val	Ala	Pro	Val	Val	Asp	Glu	Ile	Ala	Gln	Gln	Tyr	
		35					40					45				
Ser	Asp	Gln	Val	Lys	Val	Val	Lys	Val	Asn	Thr	Asp	Glu	Asn	Pro	Ser	
	50					55				60						
Val	Ala	Ser	Gln	Tyr	Gly	Ile	Arg	Ser	Ile	Pro	Thr	Leu	Met	Ile	Phe	
65					70				75						80	
Lys	Asp	Gly	Gln	Arg	Val	Asp	Thr	Val	Val	Gly	Ala	Val	Pro	Lys	Thr	
				85					90					95		
Thr	Leu	Ala	Asn	Thr	Leu	Asp	Lys	His	Leu							
			100					105								

<210> 71  
 <211> 107  
 <212> PRT  
 <213> *Cyanidium caldarium*

<400> 71																
Met	Pro	Ser	Pro	Ile	Gln	Val	Thr	Asp	Phe	Ser	Phe	Glu	Lys	Glu	Val	
1				5					10					15		
Val	Asn	Ser	Glu	Lys	Leu	Val	Leu	Val	Asp	Phe	Trp	Ala	Pro	Trp	Cys	
			20					25					30			
Gly	Pro	Cys	Arg	Met	Ile	Ser	Pro	Val	Ile	Asp	Glu	Leu	Ala	Gln	Glu	
		35					40					45				
Tyr	Val	Glu	Gln	Val	Lys	Ile	Val	Lys	Ile	Asn	Thr	Asp	Glu	Asn	Pro	
	50					55				60						
Ser	Ile	Ser	Ala	Glu	Tyr	Gly	Ile	Arg	Ser	Ile	Pro	Thr	Leu	Met	Leu	
65					70				75						80	
Phe	Lys	Asp	Gly	Lys	Arg	Val	Asp	Thr	Val	Ile	Gly	Ala	Val	Pro	Lys	
				85					90					95		
Ser	Thr	Leu	Thr	Asn	Ala	Leu	Lys	Lys	Tyr	Leu						
			100					105								

<210> 72  
 <211> 102  
 <212> PRT  
 <213> *Cyanidioschyzon merolae*

<400> 72																
Met	Leu	His	Ile	Asp	Glu	Leu	Thr	Phe	Glu	Asn	Glu	Val	Leu	Gln	Ser	
1				5					10					15		
Glu	Lys	Leu	Val	Leu	Val	Asp	Phe	Trp	Ala	Pro	Trp	Cys	Gly	Pro	Cys	
			20					25					30			
Arg	Met	Ile	Gly	Pro	Ile	Leu	Glu	Glu	Ile	Ala	Lys	Glu	Phe	Asn	Leu	
		35					40					45				
Lys	Val	Val	Gln	Val	Asn	Thr	Asp	Glu	Asn	Pro	Asn	Leu	Ala	Thr	Phe	
	50					55				60						
Tyr	Gly	Ile	Arg	Ser	Ile	Pro	Thr	Leu	Met	Leu	Phe	Lys	Lys	Gly	Gln	
65					70				75						80	



Arg Val Asp Thr Val Ile Gly Ala Val Pro Lys Ser Ile Leu Ile His  
85 90 95  
Thr Ile Asn Lys Tyr Leu  
100

<210> 73  
<211> 109  
<212> PRT  
<213> *Griffithsia pacifica*

<400> 73  
Met Ser Ile Ser Gln Val Ile Asp Thr Ser Phe His Glu Glu Val Ile  
1 5 10 15  
Asn Ser Arg Gln Pro Val Leu Val Asp Phe Trp Ala Pro Trp Cys Gly  
20 25 30  
Pro Cys Arg Met Ile Ala Ser Thr Ile Asp Glu Ile Ala His Asp Tyr  
35 40 45  
Lys Asp Lys Leu Lys Val Val Lys Val Asn Thr Asp Gln Asn Pro Thr  
50 55 60  
Ile Ala Thr Glu Tyr Gly Ile Arg Ser Ile Pro Thr Val Met Ile Phe  
65 70 75 80  
Ile Asn Gly Lys Lys Val Asp Thr Val Val Gly Ala Val Pro Lys Leu  
85 90 95  
Thr Leu Leu Asn Thr Leu Gln Lys His Leu Lys Ser Thr  
100 105

<210> 74  
<211> 107  
<212> PRT  
<213> *Porphyra yezoensis*

<400> 74  
Met Ser Val Ser Gln Val Thr Asp Ala Ser Phe Lys Gln Glu Val Ile  
1 5 10 15  
Asn Asn Asn Leu Pro Val Leu Val Asp Phe Trp Ala Pro Trp Cys Gly  
20 25 30  
Pro Cys Arg Met Val Ser Pro Val Val Asp Glu Ile Ala Glu Glu Tyr  
35 40 45  
Glu Ser Ser Ile Lys Val Val Lys Ile Asn Thr Asp Asp Asn Pro Thr  
50 55 60  
Ile Ala Ala Glu Tyr Gly Ile Arg Ser Ile Pro Thr Leu Met Ile Phe  
65 70 75 80  
Lys Ala Gly Glu Arg Val Asp Thr Val Ile Gly Ala Val Pro Lys Ser  
85 90 95  
Thr Leu Ala Ser Thr Leu Asn Lys Tyr Ile Ser  
100 105

<210> 75  
<211> 107  
<212> PRT  
<213> *Porphyra purpurea*

<400> 75  
Met Ser Val Ser Gln Val Thr Asp Ala Ser Phe Lys Gln Glu Val Ile  
1 5 10 15  
Asn Asn Asp Leu Pro Val Leu Val Asp Phe Trp Ala Pro Trp Cys Gly  
20 25 30  
Pro Cys Arg Met Val Ser Pro Val Val Asp Ala Ile Ala Glu Glu Tyr  
35 40 45  
Glu Ser Ser Ile Lys Val Val Lys Ile Asn Thr Asp Asp Asn Pro Thr  
50 55 60  
Ile Ala Ala Glu Tyr Gly Ile Arg Ser Ile Pro Thr Leu Met Ile Phe  
65 70 75 80  
Lys Ser Gly Glu Arg Val Asp Thr Val Ile Gly Ala Val Pro Lys Ser

85 90 95  
 Thr Leu Glu Ser Thr Leu Asn Lys Tyr Ile Ser  
 100 105

<210> 76  
 <211> 114  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 76  
 Met Ala Ser Glu Glu Gly Gln Val Ile Ala Cys His Thr Val Glu Thr  
 1 5 10 15  
 Trp Asn Glu Gln Leu Gln Lys Ala Asn Glu Ser Lys Thr Leu Val Val  
 20 25 30  
 Val Asp Phe Thr Ala Ser Trp Cys Gly Pro Cys Arg Phe Ile Ala Pro  
 35 40 45  
 Phe Phe Ala Asp Leu Ala Lys Lys Leu Pro Asn Val Leu Phe Leu Lys  
 50 55 60  
 Val Asp Thr Asp Glu Leu Lys Ser Val Ala Ser Asp Trp Ala Ile Gln  
 65 70 75 80  
 Ala Met Pro Thr Phe Met Phe Leu Lys Glu Gly Lys Ile Leu Asp Lys  
 85 90 95  
 Val Val Gly Ala Lys Lys Asp Glu Leu Gln Ser Thr Ile Ala Lys His  
 100 105 110  
 Leu Ala

<210> 77  
 <211> 110  
 <212> PRT  
 <213> Anabaena

<400> 77  
 Ser Lys Gly Val Ile Thr Ile Thr Asp Ala Glu Phe Glu Ser Glu Val  
 1 5 10 15  
 Leu Lys Ala Glu Gln Pro Val Leu Val Tyr Phe Trp Ala Ser Trp Cys  
 20 25 30  
 Gly Pro Cys Gln Leu Met Ser Pro Leu Ile Asn Leu Ala Ala Asn Thr  
 35 40 45  
 Tyr Ser Asp Arg Leu Lys Val Lys Leu Glu Ile Asp Pro Asn Pro  
 50 55 60  
 Thr Thr Val Lys Lys Tyr Lys Val Glu Gly Val Pro Ala Leu Arg Leu  
 65 70 75 80  
 Val Lys Gly Glu Gln Ile Leu Asp Ser Thr Glu Gly Val Ile Ser Lys  
 85 90 95  
 Asp Lys Leu Leu Ser Phe Leu Asp Thr His Leu Asn Asn Asn  
 100 105 110

<210> 78  
 <211> 123  
 <212> PRT  
 <213> Brassica napus

<400> 78  
 Met Ala Ala Thr Ala Glu Val Ile Pro Ala Gly Glu Val Ile Ala Cys  
 1 5 10 15  
 His Thr Val Glu Asp Trp Asn Asn Lys Leu Lys Ala Ala Lys Glu Ser  
 20 25 30  
 Asn Lys Leu Ile Val Ile Asp Phe Thr Ala Val Trp Cys Pro Pro Cys  
 35 40 45  
 Arg Phe Ile Ala Pro Ile Phe Val Glu Leu Ala Lys Lys His Leu Asp  
 50 55 60  
 Val Val Phe Phe Lys Val Asp Val Asp Glu Leu Ala Thr Val Ala Gln  
 65 70 75 80

Glu Phe Asp Val Gln Ala Met Pro Thr Phe Val Tyr Met Lys Gly Glu  
85 90 95  
Glu Lys Leu Asp Lys Val Val Gly Ala Ala Lys Glu Glu Ile Glu Ala  
100 105 110  
Lys Leu Leu Lys His Ser Gln Val Ala Ala Ala  
115 120

<210> 79  
<211> 126  
<212> PRT  
<213> *Nicotiana tabacum*

<400> 79  
Met Ala Ala Asn Asp Ala Thr Ser Ser Glu Glu Gly Gln Val Phe Gly  
1 5 10 15  
Cys His Lys Val Glu Glu Trp Asn Glu Tyr Phe Lys Lys Gly Val Glu  
20 25 30  
Thr Lys Lys Leu Val Val Val Asp Phe Thr Ala Ser Trp Cys Gly Pro  
35 40 45  
Cys Arg Phe Ile Ala Pro Ile Leu Ala Asp Ile Ala Lys Lys Met Pro  
50 55 60  
His Val Ile Phe Leu Lys Val Asp Val Asp Glu Leu Lys Thr Val Ser  
65 70 75 80  
Ala Glu Trp Ser Val Glu Ala Met Pro Thr Phe Val Phe Ile Lys Asp  
85 90 95  
Gly Lys Glu Val Asp Arg Val Val Gly Ala Lys Lys Glu Glu Leu Gln  
100 105 110  
Gln Thr Ile Val Lys His Ala Ala Pro Ala Thr Val Thr Ala  
115 120 125

<210> 80  
<211> 133  
<212> PRT  
<213> *Arabidopsis thaliana*

<400> 80  
Met Gly Gly Ala Leu Ser Thr Val Phe Gly Ser Gly Glu Asp Ala Thr  
1 5 10 15  
Ala Ala Gly Thr Glu Ser Glu Pro Ser Arg Val Leu Lys Phe Ser Ser  
20 25 30  
Ser Ala Arg Trp Gln Leu His Phe Asn Glu Ile Lys Glu Ser Asn Lys  
35 40 45  
Leu Leu Val Val Asp Phe Ser Ala Ser Trp Cys Gly Pro Cys Arg Met  
50 55 60  
Ile Glu Pro Ala Ile His Ala Met Ala Asp Lys Phe Asn Asp Val Asp  
65 70 75 80  
Phe Val Lys Leu Asp Val Asp Glu Leu Pro Asp Val Ala Lys Glu Phe  
85 90 95  
Asn Val Thr Ala Met Pro Thr Phe Val Leu Val Lys Arg Gly Lys Glu  
100 105 110  
Ile Glu Arg Ile Ile Gly Ala Lys Lys Asp Glu Leu Glu Lys Lys Val  
115 120 125  
Ser Lys Leu Arg Ala  
130

<210> 81  
<211> 119  
<212> PRT  
<213> *Brassica napus*

<400> 81  
Met Ala Ala Glu Glu Gly Gln Val Ile Gly Cys His Glu Ile Asp Val  
1 5 10 15  
Trp Ala Val Gln Leu Asp Thr Ala Lys Gln Ser Asn Lys Leu Ile Val

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<210> 82
<211> 118
<212> PRT
<213> Nicotiana tabacum
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<210> 83
<211> 118
<212> PRT
<213> Arabidopsis thaliana
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<210> 84
<211> 125
<212> PRT
<213> Arabidopsis thaliana
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<400> 84  
Met Ala Ala Glu Glu Gly Gln Val Ile Gly Cys His Thr Asn Asp Val  
1 5 10 15  
Trp Thr Val Gln Leu Asp Lys Ala Lys Glu Ser Asn Lys Leu Ile Val  
20 25 30  
Ile Asp Phe Thr Ala Ser Trp Cys Pro Pro Cys Arg Met Ile Ala Pro  
35 40 45  
Ile Phe Asn Asp Leu Ala Lys Lys Phe Met Ser Ser Ala Ile Phe Phe  
50 55 60  
Lys Val Asp Val Asp Glu Leu Gln Ser Val Ala Lys Glu Phe Gly Val  
65 70 75 80  
Glu Ala Met Pro Thr Phe Val Phe Ile Lys Ala Gly Glu Val Val Asp  
85 90 95  
Lys Leu Val Gly Ala Asn Lys Glu Asp Leu Gln Ala Lys Ile Val Lys  
100 105 110  
His Thr Gly Val Thr Thr Val Val Asn Gln Phe Glu Ala  
115 120 125

<210> 85  
<211> 118  
<212> PRT  
<213> Arabidopsis thaliana

<400> 85  
Met Ala Gly Glu Gly Glu Val Ile Ala Cys His Thr Leu Glu Val Trp  
1 5 10 15  
Asn Glu Lys Val Lys Asp Ala Asn Glu Ser Lys Lys Leu Ile Val Ile  
20 25 30  
Asp Phe Thr Ala Ser Trp Cys Pro Pro Cys Arg Phe Ile Ala Pro Val  
35 40 45  
Phe Ala Glu Met Ala Lys Lys Phe Thr Asn Val Val Phe Phe Lys Ile  
50 55 60  
Asp Val Asp Glu Leu Gln Ala Val Ala Gln Glu Phe Lys Val Glu Ala  
65 70 75 80  
Met Pro Thr Phe Val Phe Met Lys Glu Gly Asn Ile Ile Asp Arg Val  
85 90 95  
Val Gly Ala Ala Lys Asp Glu Ile Asn Glu Lys Leu Met Lys His Gly  
100 105 110  
Gly Leu Val Ala Ser Ala  
115

<210> 86  
<211> 123  
<212> PRT  
<213> Brassica rapa

<400> 86  
Met Ala Ala Thr Ala Glu Leu Ile Pro Ala Gly Glu Val Ile Ala Cys  
1 5 10 15  
His Thr Val Glu Asp Trp Asn Asn Lys Leu Lys Ala Ala Lys Glu Ser  
20 25 30  
Asn Lys Leu Ile Val Ile Asp Phe Thr Ala Val Trp Cys Pro Pro Cys  
35 40 45  
Arg Phe Ile Ala Pro Ile Phe Val Glu Leu Ala Lys Lys His Leu Asp  
50 55 60  
Val Val Phe Phe Lys Val Asp Val Asp Glu Leu Ala Thr Val Ala Lys  
65 70 75 80  
Glu Phe Asp Val Gln Ala Met Pro Thr Phe Val Tyr Met Lys Gly Glu  
85 90 95  
Glu Lys Leu Asp Lys Val Val Gly Ala Ala Lys Glu Glu Ile Glu Ala  
100 105 110  
Lys Leu Leu Lys His Ser Gln Val Ala Ala Ala  
115 120

<210> 87  
 <211> 112  
 <212> PRT  
 <213> Chlamydomonas reinhardtii

<400> 87  
 Gly Gly Ser Val Ile Val Ile Asp Ser Lys Ala Ala Trp Asp Ala Gln  
 1 5 10 15  
 Leu Ala Lys Gly Lys Glu Glu His Lys Pro Ile Val Val Asp Phe Thr  
 20 25 30  
 Ala Thr Trp Cys Gly Pro Cys Lys Met Ile Ala Pro Leu Phe Glu Thr  
 35 40 45  
 Leu Ser Asn Asp Tyr Ala Gly Lys Val Ile Phe Leu Lys Val Asp Val  
 50 55 60  
 Asp Ala Val Ala Ala Val Ala Glu Ala Ala Gly Ile Thr Ala Met Pro  
 65 70 75 80  
 Thr Phe His Val Tyr Lys Asp Gly Val Lys Ala Asp Asp Leu Val Gly  
 85 90 95  
 Ala Ser Gln Asp Lys Leu Lys Ala Leu Val Ala Lys His Ala Ala Ala  
 100 105 110

<210> 88  
 <211> 116  
 <212> PRT  
 <213> Fagopyrum esculentum

<400> 88  
 Met Ala Glu Glu Ala Gln Val Ile Ala Cys His Thr Val Gln Glu Trp  
 1 5 10 15  
 Asn Glu Lys Phe Gln Lys Ala Lys Asp Ser Gly Lys Leu Ile Val Ile  
 20 25 30  
 Asp Phe Thr Ala Ser Trp Cys Gly Pro Cys Arg Val Ile Thr Pro Tyr  
 35 40 45  
 Val Ser Glu Leu Ala Lys Lys Phe Pro His Val Ala Phe Phe Lys Val  
 50 55 60  
 Asp Val Asp Asp Leu Lys Asp Val Ala Glu Glu Tyr Lys Val Glu Ala  
 65 70 75 80  
 Met Pro Ser Phe Val Ile Leu Lys Glu Gly Gln Glu Val Glu Arg Ile  
 85 90 95  
 Val Gly Ala Arg Lys Asp Glu Leu Leu His Lys Ile Ala Val His Ala  
 100 105 110  
 Pro Ile Thr Ala  
 115

<210> 89  
 <211> 122  
 <212> PRT  
 <213> Oryza sativa

<400> 89  
 Met Ala Ala Glu Glu Gly Val Val Ile Ala Cys His Asn Lys Asp Glu  
 1 5 10 15  
 Phe Asp Ala Gln Met Thr Lys Ala Lys Glu Ala Gly Lys Val Val Ile  
 20 25 30  
 Ile Asp Phe Thr Ala Ser Trp Cys Gly Pro Cys Arg Phe Ile Ala Pro  
 35 40 45  
 Val Phe Ala Glu Tyr Ala Lys Lys Phe Pro Gly Ala Val Phe Leu Lys  
 50 55 60  
 Val Asp Val Asp Glu Leu Lys Glu Val Ala Glu Lys Tyr Asn Val Glu  
 65 70 75 80  
 Ala Met Pro Thr Phe Leu Phe Ile Lys Asp Gly Ala Glu Ala Asp Lys  
 85 90 95  
 Val Val Gly Ala Arg Lys Asp Asp Leu Gln Asn Thr Ile Val Lys His  
 100 105 110  
 Val Gly Ala Thr Ala Ala Ser Ala Ser Ala

<210> 90  
 <211> 125  
 <212> PRT  
 <213> *Picea mariana*

<400> 90  
 Met Ala Glu Gly Asn Val Phe Ala Cys His Ser Thr Glu Gly Trp Arg  
 1 5 10 15  
 Ser Lys Leu Gln Glu Ala Ile Asp Thr Lys Arg Leu Val Ala Val Asp  
 20 25 30  
 Phe Thr Ala Thr Trp Cys Gly Pro Cys Arg Val Ile Gly Pro Val Phe  
 35 40 45  
 Val Glu Leu Ser Lys Lys Phe Pro Glu Ile Phe Phe Leu Lys Val Asp  
 50 55 60  
 Val Asp Glu Leu Arg Asp Val Ala Gln Glu Trp Asp Val Glu Ala Met  
 65 70 75 80  
 Pro Thr Phe Ile Phe Ile Lys Asp Gly Lys Ala Val Asp Lys Val Val  
 85 90 95  
 Gly Ala Lys Lys Asp Asp Leu Glu Arg Lys Val Ala Ala Leu Ala Ala  
 100 105 110  
 Ala Ala Thr Thr Glu Ala Thr Leu Pro Ala Gln Ala  
 115 120 125

<210> 91  
 <211> 118  
 <212> PRT  
 <213> *Ricinus communis*

<400> 91  
 Met Ala Ala Glu Glu Gly Gln Val Ile Gly Cys His Thr Val Glu Ala  
 1 5 10 15  
 Trp Asn Glu Gln Leu Gln Lys Gly Asn Asp Thr Lys Gly Leu Ile Val  
 20 25 30  
 Val Asp Phe Thr Ala Ser Trp Cys Gly Pro Cys Arg Phe Ile Ala Pro  
 35 40 45  
 Phe Leu Ala Glu Leu Ala Lys Lys Leu Pro Asn Val Thr Phe Leu Lys  
 50 55 60  
 Val Asp Val Asp Glu Leu Lys Thr Val Ala His Glu Trp Ala Val Glu  
 65 70 75 80  
 Ser Met Pro Thr Phe Met Phe Leu Lys Glu Gly Lys Ile Met Asp Lys  
 85 90 95  
 Val Val Gly Ala Lys Lys Asp Glu Leu Gln Gln Thr Ile Ala Lys His  
 100 105 110  
 Met Ala Thr Ala Ser Thr  
 115

<210> 92  
 <211> 126  
 <212> PRT  
 <213> *triticum aestivum*

<400> 92  
 Ala Ala Ser Ala Ala Thr Ala Thr Ala Thr Ala Ala Val Gly Ala  
 1 5 10 15  
 Gly Glu Val Ile Ser Val His Ser Leu Glu Gln Trp Thr Met Gln Ile  
 20 25 30  
 Glu Glu Ala Asn Ala Ala Lys Lys Leu Val Val Ile Asp Phe Thr Ala  
 35 40 45  
 Ser Trp Cys Gly Pro Cys Arg Ile Met Ala Pro Ile Phe Ala Asp Leu  
 50 55 60  
 Ala Lys Lys Phe Pro Ala Ala Val Phe Leu Lys Val Asp Val Asp Glu  
 65 70 75 80

Leu	Lys	Pro	Ile	Ala	Glu	Gln	Phe	Ser	Val	Glu	Ala	Met	Pro	Thr	Phe
				85					90					95	
Leu	Phe	Met	Lys	Glu	Gly	Asp	Val	Lys	Asp	Arg	Val	Val	Gly	Ala	Ile
			100					105					110		
Lys	Glu	Glu	Leu	Thr	Thr	Lys	Val	Gly	Leu	His	Ala	Ala	Gln		
			115				120						125		

<210> 93  
 <211> 109  
 <212> PRT  
 <213> *Aspergillus nidulans*

Gly	Ala	Ser	Glu	His	Val	Pro	Pro	Ile	Thr	Ser	Lys	Ala	Glu	Phe	Gln
1				5					10					15	
Glu	Lys	Val	Leu	Asn	Ala	Lys	Gly	Phe	Val	Val	Val	Asp	Cys	Phe	Ala
			20					25					30		
Thr	Trp	Cys	Gly	Pro	Cys	Lys	Ala	Ile	Ala	Pro	Thr	Val	Glu	Lys	Phe
		35					40					45			
Ala	Gln	Thr	Tyr	Thr	Asp	Ala	Ser	Phe	Tyr	Gln	Ile	Asp	Val	Asp	Glu
	50					55					60				
Leu	Ser	Glu	Val	Ala	Ala	Glu	Leu	Gly	Ile	Arg	Ala	Met	Pro	Thr	Phe
65					70					75					80
Leu	Leu	Phe	Lys	Asp	Gly	Gln	Lys	Val	Ser	Asp	Val	Val	Gly	Ala	Asn
				85					90					95	
Pro	Gly	Ala	Leu	Glu	Ala	Gly	Ile	Lys	Ala	Leu	Leu	Ala			
			100					105							

<210> 94  
 <211> 105  
 <212> PRT  
 <213> *Alicyclobacillus*

Ala	Thr	Met	Thr	Leu	Thr	Asp	Ala	Asn	Phe	Gln	Gln	Ala	Ile	Gln	Gly
1				5					10					15	
Asp	Lys	Pro	Val	Leu	Val	Asp	Phe	Trp	Ala	Ala	Trp	Cys	Gly	Pro	Cys
			20					25					30		
Arg	Met	Met	Ala	Pro	Val	Leu	Glu	Phe	Ala	Glu	Ala	His	Ala	Asp	
		35					40				45				
Lys	Val	Thr	Val	Ala	Lys	Leu	Asn	Val	Asp	Glu	Asn	Pro	Glu	Thr	Thr
	50					55					60				
Ser	Gln	Phe	Gly	Ile	Met	Ser	Ile	Pro	Thr	Leu	Ile	Leu	Phe	Lys	Gly
65					70					75					80
Gly	Arg	Pro	Val	Lys	Gln	Leu	Ile	Gly	Tyr	Gln	Pro	Lys	Glu	Gln	Leu
				85					90					95	
Glu	Ala	Gln	Leu	Ala	Asp	Val	Leu	Gln							
			100					105							

<210> 95  
 <211> 91  
 <212> PRT  
 <213> *Archaeoglobus fulgidus*

Met	Val	Met	Met	Lys	Leu	Phe	Thr	Ser	Pro	Thr	Cys	Pro	Tyr	Cys	Pro
1				5					10					15	
Lys	Ala	Glu	Lys	Val	Val	Ser	Lys	Val	Ala	Lys	Glu	Glu	Gly	Val	Leu
			20					25					30		
Ala	Ile	Asn	Leu	Pro	Val	Asn	Thr	Asp	Glu	Gly	Leu	Lys	Glu	Ala	Leu
		35					40					45			
Lys	Phe	Gly	Ile	Arg	Gly	Val	Pro	Ala	Leu	Val	Ile	Asn	Asp	Lys	Tyr
	50					55					60				
Leu	Ile	Leu	Gly	Val	Pro	Asp	Glu	Gly	Glu	Leu	Arg	Gln	Leu	Ile	Arg



80

[illegible]

```
<400> 97
Met Phe Lys Val Tyr Gly Tyr Asp Ser Asn Ile His Lys Cys Val Tyr
 1      5          10        15
Cys Asp Asn Ala Lys Arg Leu Leu Thr Val Lys Lys Gln Pro Phe Glu
    20      25      30
Phe Ile Asn Ile Met Pro Glu Lys Gly Val Phe Asp Asp Glu Lys Ile
     35      40      45
Ala Glu Leu Leu Thr Lys Leu Gly Arg Asp Thr Gln Ile Gly Leu Thr
   50      55      60
Met Pro Gln Val Phe Ala Pro Asp Gly Ser His Ile Gly Gly Phe Asp
 65      70      75      80
Gln Leu Arg Glu Tyr Phe Lys
    85
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<400> 98															
Met	Ala	Ile	Ser	Leu	Thr	Glu	Glu	Asp	Phe	Val	Val	Lys	Val	Phe	Asp
1				5					10					15	
Tyr	Lys	Asn	Asp	Lys	Glu	Trp	Ser	Phe	Arg	Gly	Asp	Arg	Pro	Ala	Ile
			20					25					30		
Ile	Asp	Phe	Tyr	Ala	Asn	Trp	Cys	Gly	Pro	Cys	Lys	Met	Leu	Ser	Pro
		35					40					45			
Ile	Phe	Glu	Lys	Leu	Ser	Lys	Lys	Tyr	Glu	Asn	Ser	Ile	Asp	Phe	Tyr
	50					55					60				
Lys	Val	Asp	Thr	Asp	Lys	Glu	Gln	Asp	Ile	Ser	Ser	Ala	Ile	Gly	Val
65					70					75					80
Gln	Ser	Leu	Pro	Thr	Ile	Leu	Phe	Ile	Pro	Val	Asp	Gly	Lys	Pro	Lys
			85						90					95	
Val	Ser	Val	Gly	Phe	Leu	Gln	Glu	Asp	Ala	Phe	Glu	Asn	Ile	Ile	Lys
			100					105					110		

Asp Phe Phe Gly Phe  
115

<210> 99  
<211> 108  
<212> PRT  
<213> Buchnera aphidicola

<400> 99  
Met Asn Lys Ile Ile Glu Leu Thr Asp Gln Asn Phe Glu Glu Gln Val  
1 5 10 15  
Leu Asn Ser Lys Ser Phe Phe Leu Val Asp Phe Trp Ala Gln Trp Cys  
20 25 30  
Asn Pro Cys Lys Ile Leu Ala Pro Ile Leu Glu Glu Ile Ser Lys Glu  
35 40 45  
Tyr Ser Asn Lys Val Ile Val Gly Lys Leu Asn Ile Glu Glu Asn Pro  
50 55 60  
Asn Thr Ala Pro Val Tyr Ser Ile Arg Ser Ile Pro Thr Leu Leu Leu  
65 70 75 80  
Phe Asn Asn Ser Glu Val Leu Ala Thr Lys Val Gly Ala Val Ser Lys  
85 90 95  
Leu Glu Leu Lys Glu Phe Leu Asp Glu Asn Ile Asn  
100 105

<210> 100  
<211> 108  
<212> PRT  
<213> aphidicola

<400> 100  
Met Asn Lys Ile Ile Glu Leu Thr Asp Gln Asn Phe Glu Lys Glu Val  
1 5 10 15  
Leu Glu His Lys Ser Phe Val Leu Val Asp Phe Trp Ala Glu Trp Cys  
20 25 30  
Asn Pro Cys Lys Ile Leu Ala Pro Ile Leu Glu Glu Ile Ala Gln Glu  
35 40 45  
Tyr Phe Asn Lys Ile Lys Val Gly Lys Leu Asn Ile Glu Lys Asn Pro  
50 55 60  
Asn Thr Ala Pro Ile Tyr Ser Ile Arg Gly Ile Pro Ala Leu Leu Leu  
65 70 75 80  
Phe His Gly Arg Glu Val Leu Ala Thr Lys Val Gly Ala Ile Ser Lys  
85 90 95  
Leu Gln Leu Lys Asp Phe Leu Asp Glu Asn Ile Lys  
100 105

<210> 101  
<211> 108  
<212> PRT  
<213> Chlorobium limicola

<220>  
<221> VARIANT  
<222> 16, 17, 38, 42, 45, 54, 55, 58, 66, 72, 75, 79, 80, 81, 94,  
99, 103  
<223> Xaa = Any Amino Acid

<400> 101  
Ala Gly Lys Tyr Phe Glu Ala Thr Asp Lys Asn Phe Gln Thr Glu Xaa  
1 5 10 15  
Xaa Asp Ser Asp Lys Ala Val Leu Val Asp Phe Trp Ala Ser Trp Cys  
20 25 30  
Gly Pro Cys Met Met Xaa Gly Pro Val Xaa Glu Gln Xaa Ala Asp Asp  
35 40 45  
Tyr Glu Gly Lys Ala Xaa Xaa Ala Lys Xaa Asn Val Asp Glu Asn Pro

50					55					60						
Asn	Xaa	Ala	Gly	Gln	Tyr	Gly	Xaa	Arg	Ser	Xaa	Pro	Thr	Met	Xaa	Xaa	
65					70					75					80	
Xaa	Lys	Gly	Gly	Lys	Val	Val	Asp	Gln	Met	Val	Gly	Ala	Xaa	Pro	Lys	
				85					90					95		
Asn	Met	Xaa	Ala	Lys	Lys	Xaa	Asp	Glu	His	Ile	Gly					
			100					105								

<210> 102  
 <211> 102  
 <212> PRT  
 <213> Chlamydia muridarum

<400> 102																
Met	Val	Gln	Ile	Val	Ser	Gln	Asp	Asn	Phe	Ala	Asp	Ser	Ile	Ala	Ser	
1				5					10					15		
Gly	Leu	Val	Leu	Val	Asp	Phe	Phe	Ala	Glu	Trp	Cys	Gly	Pro	Cys	Lys	
			20					25					30			
Met	Leu	Thr	Pro	Val	Leu	Glu	Ala	Leu	Ala	Ala	Glu	Leu	Pro	Tyr	Val	
		35					40					45				
Thr	Ile	Leu	Lys	Leu	Asp	Ile	Asp	Ala	Ser	Pro	Arg	Pro	Ala	Glu	Gln	
	50					55					60					
Phe	Gly	Val	Ser	Ser	Ile	Pro	Thr	Leu	Ile	Leu	Phe	Lys	Asp	Gly	Lys	
65					70					75					80	
Glu	Val	Glu	Arg	Ser	Val	Gly	Leu	Lys	Asp	Lys	Asp	Ser	Leu	Val	Lys	
				85					90					95		
Leu	Ile	Ser	Lys	His	Gln											
			100													

<210> 103  
 <211> 102  
 <212> PRT  
 <213> Chlamydia pneumoniae

<400> 103																
Met	Val	Lys	Ile	Ile	Ser	Ser	Glu	Asn	Phe	Asp	Ser	Phe	Ile	Ala	Ser	
1				5					10					15		
Gly	Leu	Val	Leu	Val	Asp	Phe	Phe	Ala	Glu	Trp	Cys	Gly	Pro	Cys	Arg	
			20					25					30			
Met	Leu	Thr	Pro	Ile	Leu	Glu	Asn	Leu	Ala	Ala	Glu	Leu	Pro	His	Val	
		35					40					45				
Thr	Ile	Gly	Lys	Ile	Asn	Ile	Asp	Glu	Asn	Ser	Lys	Pro	Ala	Glu	Thr	
	50				55						60					
Tyr	Glu	Val	Ser	Ser	Ile	Pro	Thr	Leu	Ile	Leu	Phe	Lys	Asp	Gly	Asn	
65					70					75					80	
Glu	Val	Ala	Arg	Val	Val	Gly	Leu	Lys	Asp	Lys	Glu	Phe	Leu	Thr	Asn	
				85					90					95		
Leu	Ile	Asn	Lys	His	Ala											
			100													

<210> 104  
 <211> 102  
 <212> PRT  
 <213> Psittaci

<400> 104																
Met	Val	Lys	Val	Val	Ser	Ala	Glu	Asn	Phe	Asn	Ser	Phe	Ile	Ala	Thr	
1				5					10					15		
Gly	Leu	Val	Leu	Ile	Asp	Phe	Phe	Ala	Glu	Trp	Cys	Gly	Pro	Cys	Lys	
			20					25					30			
Met	Leu	Thr	Pro	Val	Leu	Glu	Ser	Leu	Glu	Ala	Glu	Val	Ser	Ser	Val	
		35					40					45				
Leu	Ile	Gly	Lys	Val	Asn	Ile	Asp	Asp	His	Pro	Ala	Pro	Ala	Glu	Gln	
	50					55					60					

Tyr Gly Val Ser Ser Ile Pro Thr Leu Ile Leu Phe Lys Asp Gly Lys  
 65 70 75 80  
 Glu Val Asp Arg Val Val Gly Leu Lys Asp Lys Asp Ser Leu Ile Arg  
 85 90 95  
 Leu Ile Asn Gln His Ser  
 100

<210> 105  
 <211> 102  
 <212> PRT  
 <213> Chlamydia trachomatis

<400> 105  
 Met Val Gln Val Val Ser Gln Glu Asn Phe Ala Asp Ser Ile Ala Ser  
 1 5 10 15  
 Gly Leu Val Leu Ile Asp Phe Phe Ala Glu Trp Cys Gly Pro Cys Lys  
 20 25 30  
 Met Leu Thr Pro Val Leu Glu Ala Leu Ala Ala Glu Leu Pro His Val  
 35 40 45  
 Thr Ile Leu Lys Val Asp Ile Asp Ser Ser Pro Arg Pro Ala Glu Gln  
 50 55 60  
 Tyr Ser Val Ser Ser Ile Pro Thr Leu Ile Leu Phe Lys Asp Gly Lys  
 65 70 75 80  
 Glu Val Glu Arg Ser Val Gly Leu Lys Asp Lys Asp Ser Leu Ile Lys  
 85 90 95  
 Leu Ile Ser Lys His Gln  
 100

<210> 106  
 <211> 105  
 <212> PRT  
 <213> Cornybacterium nephridii

<400> 106  
 Ala Thr Val Lys Val Asp Asn Ser Asn Phe Gln Ser Asp Val Leu Gln  
 1 5 10 15  
 Ser Ser Glu Pro Val Val Val Asp Phe Trp Ala Glu Trp Cys Gly Pro  
 20 25 30  
 Cys Lys Met Ile Ala Pro Ala Leu Asp Glu Ile Ala Thr Glu Met Ala  
 35 40 45  
 Gly Gln Val Lys Ile Ala Lys Val Asn Ile Asp Glu Asn Pro Glu Leu  
 50 55 60  
 Ala Ala Gln Phe Gly Val Arg Ser Ile Pro Thr Leu Leu Met Phe Lys  
 65 70 75 80  
 Asp Gly Glu Leu Ala Ala Asn Met Val Gly Ala Ala Pro Lys Ser Arg  
 85 90 95  
 Leu Ala Asp Trp Ile Lys Ala Ser Ala  
 100 105

<210> 107  
 <211> 107  
 <212> PRT  
 <213> Cornybacterium nephridii

<400> 107  
 Ser Ala Thr Ile Val Asn Thr Thr Asp Glu Asn Phe Gln Ala Asp Val  
 1 5 10 15  
 Leu Asp Ala Glu Thr Pro Val Leu Val Asp Phe Trp Ala Gly Trp Cys  
 20 25 30  
 Ala Pro Cys Lys Ala Ile Ala Pro Val Leu Glu Glu Leu Ser Asn Glu  
 35 40 45  
 Tyr Ala Gly Lys Val Lys Ile Val Lys Val Asp Val Thr Ser Cys Glu  
 50 55 60  
 Asp Thr Ala Val Lys Tyr Asn Ile Arg Asn Ile Pro Ala Leu Leu Met

65					70					75					80
Phe	Lys	Asp	Gly	Glu	Val	Val	Ala	Gln	Gln	Val	Gly	Ala	Ala	Pro	Arg
				85					90					95	
Ser	Lys	Leu	Ala	Ala	Phe	Ile	Asp	Gln	Asn	Ile					
			100					105							

<210> 108  
 <211> 145  
 <212> PRT  
 <213> *Cornybacterium nephridii*

<400> 108  
 Met Ile Ile Val Cys Ala Ser Cys Gly Ala Lys Asn Arg Val Pro Glu  
 1 5 10 15  
 Glu Lys Leu Ala Val His Pro Asn Cys Gly Gln Cys His Gln Ala Leu  
 20 25 30  
 Leu Pro Leu Glu Pro Ile Glu Leu Asn Glu Gln Asn Phe Ser Asn Phe  
 35 40 45  
 Ile Ser Asn Ser Asp Leu Pro Val Leu Ile Asp Leu Trp Ala Glu Trp  
 50 55 60  
 Cys Gly Pro Cys Lys Met Met Ala Pro His Phe Ala Gln Val Ala Lys  
 65 70 75 80  
 Gln Asn Pro Tyr Val Val Phe Ala Lys Ile Asp Thr Glu Ala Asn Pro  
 85 90 95  
 Arg Leu Ser Ala Phe Asn Val Arg Ser Ile Pro Thr Leu Val Leu  
 100 105 110  
 Met Asn Lys Thr Thr Glu Val Ala Arg Ile Ser Gly Ala Leu Arg Thr  
 115 120 125  
 Leu Glu Leu Gln Gln Trp Leu Asp Gln Gln Leu Gln Gln Gln Gly  
 130 135 140  
 Asn  
 145

<210> 109  
 <211> 107  
 <212> PRT  
 <213> *Chromatium vinosum*

<220>  
 <221> VARIANT  
 <222> 17, 38, 42, 55, 58, 60, 72, 107  
 <223> Xaa = Any Amino Acid

<400> 109  
 Ser Asp Ser Ile Val His Val Thr Asp Asp Ser Phe Glu Glu Glu Val  
 1 5 10 15  
 Xaa Lys Ser Pro Asp Pro Val Leu Val Asp Tyr Trp Ala Asp Trp Cys  
 20 25 30  
 Gly Pro Cys Lys Met Xaa Ala Pro Val Xaa Asp Glu Ile Ala Asp Glu  
 35 40 45  
 Tyr Ala Gly Arg Val Lys Xaa Ala Lys Xaa Asn Xaa Asp Glu Asn Pro  
 50 55 60  
 Asn Thr Pro Pro Arg Tyr Gly Xaa Arg Gly Ile Pro Thr Leu Met Leu  
 65 70 75 80  
 Phe Arg Gly Gly Glu Val Glu Ala Thr Lys Val Gly Ala Val Ser Lys  
 85 90 95  
 Ser Gln Leu Thr Ala Phe Leu Asp Ser Asn Xaa  
 100 105

<210> 110  
 <211> 107  
 <212> PRT  
 <213> *Clostridium litorale*

<400> 110  
Met Leu Met Leu Asp Lys Asp Thr Phe Lys Thr Glu Val Leu Glu Gly  
1 5 10 15  
Thr Gly Tyr Val Leu Val Asp Tyr Phe Ser Asp Gly Cys Val Pro Cys  
20 25 30  
Lys Ala Leu Met Pro Ala Val Glu Leu Ser Lys Lys Tyr Glu Gly  
35 40 45  
Arg Val Val Phe Ala Lys Leu Asn Thr Thr Gly Ala Arg Arg Leu Ala  
50 55 60  
Ile Ser Gln Lys Ile Leu Gly Leu Pro Thr Leu Ser Leu Tyr Lys Asp  
65 70 75 80  
Gly Val Lys Val Asp Glu Val Thr Lys Asp Asp Ala Thr Ile Glu Asn  
85 90 95  
Ile Glu Ala Met Val Glu Glu His Ile Ser Lys  
100 105

<210> 111  
<211> 40  
<212> PRT  
<213> Clostridium sporogenes

<400> 111  
Met Leu Val Leu Asp Lys Lys Thr Phe Glu Glu Glu Val Leu Lys Thr  
1 5 10 15  
Lys Gly Tyr Val Leu Val Asp Tyr Phe Gly Asp Gly Cys Val Pro Cys  
20 25 30  
Glu Ala Leu Met Pro Asp Val Glu  
35 40

<210> 112  
<211> 33  
<212> PRT  
<213> Clostridium sticklandii

<400> 112  
Met Phe Glu Leu Asp Lys Asp Thr Phe Glu Thr Glu Val Leu Gln Gly  
1 5 10 15  
Thr Gly Tyr Val Leu Val Asp Phe Trp Ser Glu Gly Cys Glu Pro Cys  
20 25 30  
Lys

<210> 113  
<211> 106  
<212> PRT  
<213> Coprinus comatus

<400> 113  
Met Val Gln Val Ile Ser Asn Leu Asp Glu Phe Asn Lys Leu Thr Asn  
1 5 10 15  
Ser Gly Lys Ile Ile Ile Ile Asp Phe Trp Ala Thr Trp Cys Gly Pro  
20 25 30  
Cys Arg Val Ile Ser Pro Ile Phe Glu Lys Phe Ser Glu Lys Tyr Gly  
35 40 45  
Ala Asn Asn Ile Val Phe Ala Lys Val Asp Val Asp Thr Ala Ser Asp  
50 55 60  
Ile Ser Glu Glu Ala Lys Ile Arg Ala Met Pro Thr Phe Gln Val Tyr  
65 70 75 80  
Lys Asp Gly Gln Lys Ile Asp Glu Leu Val Gly Ala Asn Pro Thr Ala  
85 90 95  
Leu Glu Ser Leu Val Gln Lys Ser Leu Ala  
100 105

<210> 114  
 <211> 105  
 <212> PRT  
 <213> Dictyostelium discoideum

<400> 114  
 Met Ser Asn Arg Val Ile His Val Ser Ser Cys Glu Glu Leu Asp Lys  
 1 5 10 15  
 His Leu Arg Asp Glu Arg Val Val Val Asp Phe Ser Ala Val Trp Cys  
 20 25 30  
 Gly Pro Cys Arg Ala Ile Ser Pro Val Phe Glu Lys Leu Ser Asn Glu  
 35 40 45  
 Phe Ile Thr Phe Thr Phe Leu His Val Asp Ile Asp Lys Leu Asn Val  
 50 55 60  
 His Pro Ile Val Ser Lys Ile Lys Ser Val Pro Thr Phe His Phe Tyr  
 65 70 75 80  
 Arg Asn Gly Ser Lys Val Ser Glu Phe Ser Gly Ala Ser Glu Ser Ile  
 85 90 95  
 Leu Arg Ser Thr Leu Glu Ala Asn Lys  
 100 105

<210> 115  
 <211> 88  
 <212> PRT  
 <213> Dictyostelium discoideum

<400> 115  
 Met Ser Arg Val Ile His Ile Ser Ser Asn Glu Glu Leu Asp Lys His  
 1 5 10 15  
 Leu Gln Ala Glu Arg Leu Val Ile Asp Phe Ser Ala Ala Trp Cys Gly  
 20 25 30  
 Pro Cys Arg Ala Ile Ser Pro Val Phe Glu Lys Leu Ser Asn Glu Phe  
 35 40 45  
 Val Thr Phe Thr Phe Val His Val Asp Ile Asp Lys Leu Ser Gly His  
 50 55 60  
 Pro Ile Val Lys Glu Ile Arg Ser Val Pro Thr Phe Tyr Phe Tyr Arg  
 65 70 75 80  
 Asn Gly Ala Lys Val Ser Glu Phe  
 85

<210> 116  
 <211> 88  
 <212> PRT  
 <213> Dictyostelium discoideum

<400> 116  
 Met Ser Arg Val Ile His Ile Ser Ser Asn Glu Glu Leu Asp Lys His  
 1 5 10 15  
 Leu Gln Ala Glu Arg Leu Val Ile Asp Phe Ser Ala Ala Trp Cys Gly  
 20 25 30  
 Pro Cys Arg Ala Ile Ser Pro Val Phe Glu Lys Leu Ser Asn Glu Phe  
 35 40 45  
 Val Thr Phe Thr Phe Val His Val Asp Ile Asp Lys Leu Ser Gly His  
 50 55 60  
 Pro Ile Val Lys Glu Ile Arg Ser Val Pro Thr Phe Tyr Phe Tyr Arg  
 65 70 75 80  
 Asn Gly Ala Lys Val Ser Glu Phe  
 85

<210> 117  
 <211> 108  
 <212> PRT  
 <213> E coli, salmonella typhimurium

<400> 117  
 Ser Asp Lys Ile Ile His Leu Thr Asp Asp Ser Phe Asp Thr Asp Val  
 1 5 10 15  
 Leu Lys Ala Asp Gly Ala Ile Leu Val Asp Phe Trp Ala Glu Trp Cys  
 20 25 30  
 Gly Pro Cys Lys Met Ile Ala Pro Ile Leu Asp Glu Ile Ala Asp Glu  
 35 40 45  
 Tyr Gln Gly Lys Leu Thr Val Ala Lys Leu Asn Ile Asp Gln Asn Pro  
 50 55 60  
 Gly Thr Ala Pro Lys Tyr Gly Ile Arg Gly Ile Pro Thr Leu Leu Leu  
 65 70 75 80  
 Phe Lys Asn Gly Glu Val Ala Ala Thr Lys Val Gly Ala Leu Ser Lys  
 85 90 95  
 Gly Gln Leu Lys Glu Phe Leu Asp Ala Asn Leu Ala  
 100 105

<210> 118  
 <211> 105  
 <212> PRT  
 <213> Synechocystis

<400> 118  
 Met Ala Val Lys Lys Gln Phe Ala Asn Phe Ala Glu Met Leu Ala Gly  
 1 5 10 15  
 Ser Pro Lys Pro Val Leu Val Asp Phe Tyr Ala Thr Trp Cys Gly Pro  
 20 25 30  
 Cys Gln Met Met Ala Pro Ile Leu Glu Gln Val Gly Ser His Leu Arg  
 35 40 45  
 Gln Gln Ile Gln Val Val Lys Ile Asp Thr Asp Lys Tyr Pro Ala Ile  
 50 55 60  
 Ala Thr Gln Tyr Gln Ile Gln Ser Leu Pro Thr Leu Val Leu Phe Lys  
 65 70 75 80  
 Gln Gly Gln Pro Val His Arg Met Glu Gly Val Gln Gln Ala Ala Gln  
 85 90 95  
 Leu Ile Gln Gln Leu Gln Val Phe Val  
 100 105

<210> 119  
 <211> 139  
 <212> PRT  
 <213> E. coli

<400> 119  
 Met Asn Thr Val Cys Thr His Cys Gln Ala Ile Asn Arg Ile Pro Asp  
 1 5 10 15  
 Asp Arg Ile Glu Asp Ala Ala Lys Cys Gly Arg Cys Gly His Asp Leu  
 20 25 30  
 Phe Asp Gly Glu Val Ile Asn Ala Thr Gly Glu Thr Leu Asp Lys Leu  
 35 40 45  
 Leu Lys Asp Asp Leu Pro Val Val Ile Asp Phe Trp Ala Pro Trp Cys  
 50 55 60  
 Gly Pro Cys Arg Asn Phe Ala Pro Ile Phe Glu Asp Val Ala Gln Glu  
 65 70 75 80  
 Arg Ser Gly Lys Val Arg Phe Val Lys Val Asn Thr Glu Ala Glu Arg  
 85 90 95  
 Glu Leu Ser Ser Arg Phe Gly Ile Arg Ser Ile Pro Thr Ile Met Ile  
 100 105 110  
 Phe Lys Asn Gly Gln Val Val Asp Met Leu Asn Gly Ala Val Pro Lys  
 115 120 125  
 Ala Pro Phe Asp Ser Trp Leu Asn Glu Ser Leu  
 130 135

<210> 120  
 <211> 110



<212> PRT

<213> Eubacterium acidaminophilum

<400> 120

Met	Ser	Ala	Leu	Leu	Val	Glu	Ile	Asp	Lys	Asp	Gln	Phe	Gln	Ala	Glu
1				5					10					15	
Val	Leu	Glu	Ala	Glu	Gly	Tyr	Val	Leu	Val	Asp	Tyr	Phe	Ser	Asp	Gly
			20					25					30		
Cys	Val	Pro	Cys	Lys	Ala	Leu	Met	Pro	Asp	Val	Glu	Glu	Leu	Ala	Ala
		35					40					45			
Lys	Tyr	Glu	Gly	Lys	Val	Ala	Phe	Arg	Lys	Phe	Asn	Thr	Ser	Ser	Ala
	50					55					60				
Arg	Arg	Leu	Ala	Ile	Ser	Gln	Lys	Ile	Leu	Gly	Leu	Pro	Thr	Ile	Thr
65					70					75				80	
Leu	Tyr	Lys	Gly	Gly	Gln	Lys	Val	Glu	Glu	Val	Thr	Lys	Asp	Asp	Ala
				85					90					95	
Thr	Arg	Glu	Asn	Ile	Asp	Ala	Met	Ile	Ala	Lys	His	Val	Gly		
			100					105					110		

<210> 121

<211> 107

<212> PRT

<213> Haemophilus influenzae

<400> 121

Met	Ser	Glu	Val	Leu	His	Ile	Asn	Asp	Ala	Asp	Phe	Glu	Ser	Val	Val
1				5					10					15	
Val	Asn	Ser	Asp	Ile	Pro	Ile	Leu	Leu	Asp	Phe	Trp	Ala	Pro	Trp	Cys
			20					25					30		
Gly	Pro	Cys	Lys	Met	Ile	Ala	Pro	Val	Leu	Asp	Glu	Leu	Ala	Pro	Glu
		35					40					45			
Phe	Ala	Gly	Lys	Val	Lys	Ile	Val	Lys	Met	Asn	Val	Asp	Asp	Asn	Gln
	50					55				60					
Ala	Thr	Pro	Ala	Gln	Phe	Gly	Val	Arg	Ser	Ile	Pro	Thr	Leu	Leu	Leu
65					70				75					80	
Ile	Lys	Asn	Gly	Gln	Val	Val	Ala	Thr	Gln	Val	Gly	Ala	Leu	Pro	Lys
				85					90					95	
Thr	Gln	Leu	Ala	Asn	Phe	Ile	Asn	Gln	His	Ile					
			100					105							

<210> 122

<211> 167

<212> PRT

<213> Haemophilus influenzae

<400> 122

Met	Lys	Ile	Lys	Lys	Leu	Leu	Lys	Asn	Gly	Leu	Ser	Leu	Phe	Leu	Thr
1				5					10					15	
Phe	Ile	Val	Ile	Thr	Ser	Ile	Leu	Asp	Phe	Val	Arg	Arg	Pro	Val	Val
			20					25					30		
Pro	Glu	Glu	Ile	Asn	Lys	Ile	Thr	Leu	Gln	Asp	Leu	Gln	Gly	Asn	Thr
		35					40					45			
Phe	Ser	Leu	Glu	Ser	Leu	Asp	Gln	Asn	Lys	Pro	Thr	Leu	Leu	Tyr	Phe
	50					55				60					
Trp	Gly	Thr	Trp	Cys	Gly	Tyr	Cys	Arg	Tyr	Thr	Ser	Pro	Ala	Ile	Asn
65					70				75					80	
Ser	Leu	Ala	Lys	Glu	Gly	Tyr	Gln	Val	Val	Ser	Val	Ala	Leu	Arg	Ser
				85					90					95	
Gly	Asn	Glu	Ala	Asp	Val	Asn	Asp	Tyr	Leu	Ser	Lys	Asn	Asp	Tyr	His
			100					105					110		
Phe	Thr	Thr	Val	Asn	Asp	Pro	Lys	Gly	Glu	Phe	Ala	Glu	Arg	Trp	Gln
		115					120					125			
Ile	Asn	Val	Thr	Pro	Thr	Ile	Val	Leu	Leu	Ser	Lys	Gly	Lys	Met	Asp
	130					135					140				
Leu	Val	Thr	Thr	Gly	Leu	Thr	Ser	Tyr	Trp	Gly	Leu	Lys	Val	Arg	Leu

145  
Phe Phe Ala Glu Phe Phe Gly  
165

155

160

<210> 123  
<211> 106  
<212> PRT  
<213> *Helicobacter pylori*

<400> 123  
Met Ser His Tyr Ile Glu Leu Thr Glu Glu Asn Phe Glu Ser Thr Ile  
1 5 10 15  
Lys Lys Gly Val Ala Leu Val Asp Phe Trp Ala Pro Trp Cys Gly Pro  
20 25 30  
Cys Lys Met Leu Ser Pro Val Ile Asp Glu Leu Ala Ser Glu Tyr Glu  
35 40 45  
Gly Lys Ala Lys Ile Cys Lys Val Asn Thr Asp Glu Gln Glu Glu Leu  
50 55 60  
Ser Ala Lys Phe Gly Ile Arg Ser Ile Pro Thr Leu Leu Phe Thr Lys  
65 70 75 80  
Asp Gly Glu Val Val His Gln Leu Val Gly Val Gln Thr Lys Val Ala  
85 90 95  
Leu Lys Glu Gln Leu Asn Lys Leu Leu Gly  
100 105

<210> 124  
<211> 103  
<212> PRT  
<213> *Listeria monocytogenes*

<400> 124  
Met Val Lys Glu Ile Thr Asp Ala Thr Phe Glu Gln Glu Thr Ser Glu  
1 5 10 15  
Gly Leu Val Leu Thr Asp Phe Trp Ala Thr Trp Cys Gly Pro Cys Arg  
20 25 30  
Met Val Ala Pro Val Leu Glu Glu Ile Gln Glu Glu Arg Gly Glu Ala  
35 40 45  
Leu Lys Ile Val Lys Met Asp Val Asp Glu Asn Pro Glu Thr Pro Gly  
50 55 60  
Ser Phe Gly Val Met Ser Ile Pro Thr Leu Leu Ile Lys Lys Asp Gly  
65 70 75 80  
Glu Val Val Glu Thr Ile Ile Gly Tyr Arg Pro Lys Glu Glu Leu Asp  
85 90 95  
Glu Val Ile Asn Lys Tyr Val  
100

<210> 125  
<211> 85  
<212> PRT  
<213> *Methanococcus jannaschii*

<400> 125  
Met Ser Lys Val Lys Ile Glu Leu Phe Thr Ser Pro Met Cys Pro His  
1 5 10 15  
Cys Pro Ala Ala Lys Arg Val Val Glu Val Ala Asn Glu Met Pro  
20 25 30  
Asp Ala Val Glu Val Glu Tyr Ile Asn Val Met Glu Asn Pro Gln Lys  
35 40 45  
Ala Met Glu Tyr Gly Ile Met Ala Val Pro Thr Ile Val Ile Asn Gly  
50 55 60  
Asp Val Glu Phe Ile Gly Ala Pro Thr Lys Glu Ala Leu Val Glu Ala  
65 70 75 80  
Ile Lys Lys Arg Leu  
85

<210> 126  
 <211> 102  
 <212> PRT  
 <213> Mycoplasma genitalium

<400> 126  
 Met Val Thr Glu Ile Arg Ser Leu Lys Gln Leu Glu Glu Ile Phe Ser  
 1 5 10 15  
 Ala Lys Lys Asn Val Ile Val Asp Phe Trp Ala Ala Trp Cys Gly Pro  
 20 25 30  
 Cys Lys Leu Thr Ser Pro Glu Phe Gln Lys Ala Ala Asp Glu Phe Ser  
 35 40 45  
 Asp Ala Gln Phe Val Lys Val Asn Val Asp Asp His Thr Asp Ile Ala  
 50 55 60  
 Ala Ala Tyr Asn Ile Thr Ser Leu Pro Thr Ile Val Val Phe Glu Asn  
 65 70 75 80  
 Gly Val Glu Lys Lys Arg Ala Ile Gly Phe Met Pro Lys Thr Lys Ile  
 85 90 95  
 Ile Asp Leu Phe Asn Asn  
 100

<210> 127  
 <211> 458  
 <212> PRT  
 <213> mycobacterium leprae

<400> 127  
 Met Asn Thr Thr Pro Ser Ala His Glu Thr Ile His Glu Val Ile Val  
 1 5 10 15  
 Ile Gly Ser Gly Pro Ala Gly Tyr Thr Ala Ala Leu Tyr Ala Ala Arg  
 20 25 30  
 Ala Gln Leu Thr Pro Leu Val Phe Glu Gly Thr Ser Phe Gly Gly Ala  
 35 40 45  
 Leu Met Thr Thr Thr Glu Val Glu Asn Tyr Pro Gly Phe Arg Asn Gly  
 50 55 60  
 Ile Thr Gly Pro Glu Leu Met Asp Asp Met Arg Glu Gln Ala Leu Arg  
 65 70 75 80  
 Phe Gly Ala Glu Leu Arg Thr Glu Asp Val Glu Ser Val Ser Leu Arg  
 85 90 95  
 Gly Pro Ile Lys Ser Val Val Thr Ala Glu Gly Gln Thr Tyr Gln Ala  
 100 105 110  
 Arg Ala Val Ile Leu Ala Met Gly Thr Ser Val Arg Tyr Leu Gln Ile  
 115 120 125  
 Pro Gly Glu Gln Glu Leu Leu Gly Arg Gly Val Ser Ala Cys Ala Thr  
 130 135 140  
 Cys Asp Gly Ser Phe Phe Arg Gly Gln Asp Ile Ala Val Ile Gly Gly  
 145 150 155 160  
 Gly Asp Ser Ala Met Glu Glu Ala Leu Phe Leu Thr Arg Phe Ala Arg  
 165 170 175  
 Ser Val Thr Leu Val His Arg Arg Asp Glu Phe Arg Ala Ser Lys Ile  
 180 185 190  
 Met Leu Gly Arg Ala Arg Asn Asn Asp Lys Ile Lys Phe Ile Thr Asn  
 195 200 205  
 His Thr Val Val Ala Val Asn Gly Tyr Thr Thr Val Thr Gly Leu Arg  
 210 215 220  
 Leu Arg Asn Thr Thr Thr Gly Glu Glu Thr Thr Leu Val Val Thr Gly  
 225 230 235 240  
 Val Phe Val Ala Ile Gly His Glu Pro Arg Ser Ser Leu Val Ser Asp  
 245 250 255  
 Val Val Asp Ile Asp Pro Asp Gly Tyr Val Leu Val Lys Gly Arg Thr  
 260 265 270  
 Thr Ser Thr Ser Met Asp Gly Val Phe Ala Ala Gly Asp Leu Val Asp  
 275 280 285  
 Arg Thr Tyr Arg Gln Ala Ile Thr Ala Ala Gly Ser Gly Cys Ala Ala  
 290 295 300

Ala Ile Asp Ala Glu Arg Trp Leu Ala Glu His Ala Gly Ser Lys Ala  
 305 310 315 320  
 Asn Glu Thr Thr Glu Glu Thr Gly Asp Val Asp Ser Thr Asp Thr Thr  
 325 330 335  
 Asp Trp Ser Thr Ala Met Thr Asp Ala Lys Asn Ala Gly Val Thr Ile  
 340 345 350  
 Glu Val Thr Asp Ala Ser Phe Phe Ala Asp Val Leu Ser Ser Asn Lys  
 355 360 365  
 Pro Val Leu Val Asp Phe Trp Ala Thr Trp Cys Gly Pro Cys Lys Met  
 370 375 380  
 Val Ala Pro Val Leu Glu Ile Ala Ser Glu Gln Arg Asn Gln Leu  
 385 390 395 400  
 Thr Val Ala Lys Leu Asp Val Asp Thr Asn Pro Glu Met Ala Arg Glu  
 405 410 415  
 Phe Gln Val Val Ser Ile Pro Thr Met Ile Leu Phe Gln Gly Gly Gln  
 420 425 430  
 Pro Val Lys Arg Ile Val Gly Ala Lys Gly Lys Ala Ala Leu Leu Arg  
 435 440 445  
 Asp Leu Ser Asp Val Val Pro Asn Leu Asn  
 450 455

<210> 128  
 <211> 102  
 <212> PRT  
 <213> Mycoplasma pneumoniae

<400> 128  
 Met Val Thr Glu Ile Lys Ser Leu Lys Gln Leu Gly Glu Leu Phe Ala  
 1 5 10 15  
 Ser Asn Asn Lys Val Ile Ile Asp Phe Trp Ala Glu Trp Cys Gly Pro  
 20 25 30  
 Cys Lys Ile Thr Gly Pro Glu Phe Ala Lys Ala Ala Ser Glu Val Ser  
 35 40 45  
 Thr Val Ala Phe Ala Lys Val Asn Val Asp Glu Gln Thr Asp Ile Ala  
 50 55 60  
 Ala Ala Tyr Lys Ile Thr Ser Leu Pro Thr Ile Val Leu Phe Glu Lys  
 65 70 75 80  
 Gly Gln Glu Lys His Arg Ala Ile Gly Phe Met Pro Lys Ala Lys Ile  
 85 90 95  
 Val Gln Leu Val Ser Gln  
 100

<210> 129  
 <211> 112  
 <212> PRT  
 <213> Mycobacterium smegmatis

<400> 129  
 Met Ser Glu Asp Ser Ala Thr Val Ala Val Thr Asp Asp Ser Phe Ser  
 1 5 10 15  
 Thr Asp Val Leu Gly Ser Ser Lys Pro Val Leu Val Asp Phe Trp Ala  
 20 25 30  
 Thr Trp Cys Gly Pro Cys Lys Met Val Ala Pro Val Leu Glu Glu Ile  
 35 40 45  
 Ala Ala Glu Lys Gly Asp Gln Leu Thr Val Ala Lys Ile Asp Val Asp  
 50 55 60  
 Val Asp Ala Asn Pro Ala Thr Ala Arg Asp Phe Gln Val Val Ser Ile  
 65 70 75 80  
 Pro Thr Met Ile Leu Phe Lys Asp Gly Ala Pro Val Lys Arg Ile Val  
 85 90 95  
 Gly Ala Lys Gly Lys Ala Ala Leu Leu Arg Glu Leu Ser Asp Ala Leu  
 100 105 110

<210> 130

<211> 115  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 130  
 Thr Asp Ser Glu Lys Ser Ala Thr Ile Lys Val Thr Asp Ala Ser Phe  
 1 5 10 15  
 Ala Thr Asp Val Leu Ser Ser Asn Lys Pro Val Leu Val Asp Phe Trp  
 20 25 30  
 Ala Thr Trp Cys Gly Pro Cys Lys Met Val Ala Pro Val Leu Glu Glu  
 35 40 45  
 Ile Ala Thr Glu Arg Ala Thr Asp Leu Thr Val Ala Lys Leu Asp Val  
 50 55 60  
 Asp Thr Asn Pro Glu Thr Ala Arg Asn Phe Gln Val Val Ser Ile Pro  
 65 70 75 80  
 Thr Leu Ile Leu Phe Lys Asp Gly Gln Pro Val Lys Arg Ile Val Gly  
 85 90 95  
 Ala Lys Gly Lys Ala Ala Leu Leu Arg Glu Leu Ser Asp Val Val Pro  
 100 105 110  
 Asn Leu Asn  
 115

<210> 131  
 <211> 127  
 <212> PRT  
 <213> Neurospora crassa

<400> 131  
 Met Ser Asp Gly Val Lys His Ile Asn Ser Ala Gln Glu Phe Ala Asn  
 1 5 10 15  
 Leu Leu Asn Thr Thr Gln Tyr Val Val Ala Asp Phe Tyr Ala Asp Trp  
 20 25 30  
 Cys Gly Pro Cys Lys Ala Ile Ala Pro Met Tyr Ala Gln Phe Ala Lys  
 35 40 45  
 Thr Phe Ser Ile Pro Asn Phe Leu Ala Phe Ala Lys Ile Asn Val Asp  
 50 55 60  
 Ser Val Gln Gln Val Ala Gln His Tyr Arg Val Ser Ala Met Pro Thr  
 65 70 75 80  
 Phe Leu Phe Phe Lys Asn Gly Lys Gln Val Ala Val Asn Gly Ser Val  
 85 90 95  
 Met Ile Gln Gly Ala Asp Val Asn Ser Leu Arg Ala Ala Ala Glu Lys  
 100 105 110  
 Met Gly Arg Leu Ala Lys Glu Lys Ala Ala Ala Ala Gly Ser Ser  
 115 120 125

<210> 132  
 <211> 106  
 <212> PRT  
 <213> Penicillium chrysogenum

<400> 132  
 Met Gly Val Thr Pro Ile Lys Ser Val Ala Glu Tyr Lys Glu Lys Val  
 1 5 10 15  
 Thr Asp Ala Thr Gly Pro Val Val Val Asp Phe His Ala Thr Trp Cys  
 20 25 30  
 Gly Pro Cys Lys Ala Ile Ala Pro Ala Leu Glu Lys Leu Ser Glu Thr  
 35 40 45  
 His Thr Gly Ile Gln Phe Tyr Lys Val Asp Val Asp Glu Leu Ser Glu  
 50 55 60  
 Val Ala Ala Ser Asn Gly Val Ser Ala Met Pro Thr Phe His Phe Tyr  
 65 70 75 80  
 Lys Gly Gly Glu Arg Asn Glu Glu Val Lys Gly Ala Asn Pro Ala Ala  
 85 90 95  
 Ile Gln Ala Gly Val Lys Ala Ile Leu Glu  
 100 105

<210> 133  
 <211> 108  
 <212> PRT  
 <213> *Pseudomonas aeruginosa*

<400> 133  
 Met Ser Glu His Ile Val Asn Val Thr Asp Ala Ser Phe Glu Gln Asp  
 1 5 10 15  
 Val Leu Lys Ala Asp Gly Pro Val Leu Val Asp Tyr Trp Ala Glu Trp  
 20 25 30  
 Cys Gly Pro Cys Lys Met Ile Ala Pro Val Leu Asp Glu Val Ala Arg  
 35 40 45  
 Asp Tyr Gln Gly Lys Leu Lys Val Cys Lys Leu Asn Ile Asp Glu Asn  
 50 55 60  
 Gln Asp Thr Pro Pro Lys Tyr Gly Val Arg Gly Ile Pro Thr Leu Met  
 65 70 75 80  
 Leu Phe Lys Asp Gly Asn Val Glu Ala Thr Lys Val Gly Ala Leu Ser  
 85 90 95  
 Lys Ser Gln Leu Ala Ala Phe Leu Asp Ala Asn Ile  
 100 105

<210> 134  
 <211> 104  
 <212> PRT  
 <213> *Rhodospirillum rubrum*

<220>  
 <221> VARIANT  
 <222> 21, 35  
 <223> Xaa = Any Amino Acid

<400> 134  
 Met Lys Gln Val Ser Asp Ala Ser Phe Glu Glu Asp Val Leu Lys Ala  
 1 5 10 15  
 Asp Gly Pro Asn Xaa Val Asp Phe Trp Ala Glu Trp Cys Gly Pro Cys  
 20 25 30  
 Arg Gln Xaa Ala Pro Ala Leu Glu Glu Leu Ala Thr Ala Leu Gly Asp  
 35 40 45  
 Lys Val Thr Val Ala Lys Ile Asn Ile Asp Glu Asn Pro Gln Thr Pro  
 50 55 60  
 Ser Lys Tyr Gly Val Arg Gly Ile Pro Thr Leu Met Ile Phe Lys Asp  
 65 70 75 80  
 Gly Gln Val Ala Ala Thr Lys Ile Gly Ala Leu Pro Lys Thr Lys Leu  
 85 90 95  
 Phe Glu Trp Val Glu Ala Ser Val  
 100

<210> 135  
 <211> 105  
 <212> PRT  
 <213> *Rhodobacter sphaeroides*

<400> 135  
 Ser Thr Val Pro Val Thr Asp Ala Thr Phe Asp Thr Glu Val Arg Lys  
 1 5 10 15  
 Ser Asp Val Pro Val Val Val Asp Phe Trp Ala Glu Trp Cys Gly Pro  
 20 25 30  
 Cys Arg Gln Ile Gly Pro Ala Leu Glu Glu Leu Ser Lys Glu Tyr Ala  
 35 40 45  
 Gly Lys Val Lys Ile Val Lys Val Asn Val Asp Glu Asn Pro Glu Ser  
 50 55 60  
 Pro Ala Met Leu Gly Val Arg Gly Ile Pro Ala Leu Phe Leu Phe Lys  
 65 70 75 80  
 Asn Gly Gln Val Val Ser Asn Lys Val Gly Ala Ala Pro Lys Ala Ala

85  
Leu Ala Thr Trp Ile Ala Ser Ala Leu  
100 105

90

95

<210> 136  
<211> 130  
<212> PRT  
<213> Rickettsia prowazekii

<400> 136  
Met Ser Cys Tyr Asn Glu Ile Thr Thr Leu Leu Glu Phe Asp Ser Asn  
1 5 10 15  
Asp Ile Asn Thr Thr Gln Arg Ile Asn Met Val Asn Asn Val Thr Asp  
20 25 30  
Ser Ser Phe Lys Asn Glu Val Leu Glu Ser Asp Leu Pro Val Met Val  
35 40 45  
Asp Phe Trp Ala Glu Trp Cys Gly Pro Cys Lys Met Leu Ile Pro Ile  
50 55 60  
Ile Asp Glu Ile Ser Lys Glu Leu Gln Asp Lys Val Lys Val Leu Lys  
65 70 75 80  
Met Asn Ile Asp Glu Asn Pro Lys Thr Pro Ser Glu Tyr Gly Ile Arg  
85 90 95  
Ser Ile Pro Thr Ile Met Leu Phe Lys Asn Gly Glu Gln Lys Asp Thr  
100 105 110  
Lys Ile Gly Leu Gln Gln Lys Asn Ser Leu Leu Asp Trp Ile Asn Lys  
115 120 125  
Ser Ile  
130

<210> 137  
<211> 106  
<212> PRT  
<213> Streptomyces aureofaciens

<400> 137  
Gly Ala Thr Val Lys Val Thr Asn Ala Thr Phe Lys Ser Asp Val Leu  
1 5 10 15  
Glu Ser Asp Lys Pro Val Leu Val His Phe Glu Gly Pro Trp Cys Gly  
20 25 30  
Pro Cys Lys Met Val Ala Pro Val Leu Asp Glu Ile Ala Asn Glu Tyr  
35 40 45  
Glu Gly Lys Val Lys Val Ala Lys Val Asn Thr Asp Glu Asn Pro Gln  
50 55 60  
Leu Ala Ser Gln Tyr Gly Val Arg Ser Ile Pro Thr Arg Leu Met Phe  
65 70 75 80  
Lys Gly Gly Glu Val Ala Ala Asn Met Val Gly Ala Ala Pro Lys Thr  
85 90 95  
Arg Leu Ala Ala Phe Leu Asp Ala Ser Leu  
100 105

<210> 138  
<211> 110  
<212> PRT  
<213> Streptomyces coelicolor

<400> 138  
Met Ala Gly Thr Leu Lys His Val Thr Asp Asp Ser Phe Glu Gln Asp  
1 5 10 15  
Val Leu Lys Asn Asp Lys Pro Val Leu Val Asp Phe Trp Ala Ala Trp  
20 25 30  
Cys Gly Pro Cys Arg Gln Ile Ala Pro Ser Leu Glu Ala Ile Ala Ala  
35 40 45  
Glu Tyr Gly Asp Lys Ile Glu Ile Val Lys Leu Asn Ile Asp Glu Asn  
50 55 60

Pro Gly Thr Ala Ala Lys Tyr Gly Val Met Ser Ile Pro Thr Leu Asn  
65 70 75 80  
Val Tyr Gln Gly Gly Glu Val Ala Lys Thr Ile Val Gly Ala Lys Pro  
85 90 95  
Lys Ala Ala Ile Val Arg Asp Leu Glu Asp Phe Ile Ala Asp  
100 105 110

<210> 139  
<211> 107  
<212> PRT  
<213> Streptomyces clavuligerus

<400> 139  
Met Ala Gly Val Leu Lys Asn Val Thr Asp Asp Thr Phe Glu Ala Asp  
1 5 10 15  
Val Leu Lys Ser Glu Lys Pro Val Leu Val Asp Phe Trp Ala Glu Trp  
20 25 30  
Cys Gly Pro Cys Arg Gln Ile Ala Pro Ser Leu Glu Ala Ile Thr Glu  
35 40 45  
His Gly Gly Gln Ile Glu Ile Val Lys Leu Asn Ile Asp Gln Asn Pro  
50 55 60  
Ala Thr Ala Ala Lys Tyr Gly Val Met Ser Ile Pro Thr Leu Asn Val  
65 70 75 80  
Tyr Gln Gly Gly Glu Val Val Lys Thr Ile Val Gly Ala Lys Pro Lys  
85 90 95  
Ala Ala Leu Leu Arg Pro Gly Pro Val Pro Arg  
100 105

<210> 140  
<211> 106  
<212> PRT  
<213> Synechocystis

<400> 140  
Ser Ala Thr Pro Gln Val Ser Asp Ala Ser Phe Lys Glu Asp Val Leu  
1 5 10 15  
Asp Ser Glu Leu Pro Val Leu Val Asp Phe Trp Ala Pro Trp Cys Gly  
20 25 30  
Pro Cys Arg Met Val Ala Pro Val Val Asp Glu Ile Ser Gln Gln Tyr  
35 40 45  
Glu Gly Lys Val Lys Val Val Lys Leu Asn Thr Asp Glu Asn Pro Asn  
50 55 60  
Thr Ala Ser Gln Tyr Gly Ile Arg Ser Ile Pro Thr Leu Met Ile Phe  
65 70 75 80  
Lys Gly Gly Gln Arg Val Asp Met Val Val Gly Ala Val Pro Lys Thr  
85 90 95  
Thr Leu Ala Ser Thr Leu Glu Lys Tyr Leu  
100 105

<210> 141  
<211> 109  
<212> PRT  
<213> Synechocystis

<400> 141  
Met Ser Leu Leu Glu Ile Thr Asp Ala Glu Phe Glu Gln Glu Thr Gln  
1 5 10 15  
Gly Gln Thr Lys Pro Val Leu Val Tyr Phe Trp Ala Ser Trp Cys Gly  
20 25 30  
Pro Cys Arg Leu Met Ala Pro Ala Ile Gln Ala Ile Ala Lys Asp Tyr  
35 40 45  
Gly Asp Lys Leu Lys Val Leu Lys Leu Glu Val Asp Pro Asn Pro Ala  
50 55 60  
Ala Val Ala Gln Cys Lys Val Glu Gly Val Pro Ala Leu Arg Leu Phe





<400> 145  
 Met Ala Leu Leu Asp Ile Ser Ser Gly Asn Val Arg Lys Thr Ile Glu  
 1 5 10 15  
 Thr Asn Pro Leu Val Ile Val Asp Phe Trp Ala Pro Trp Cys Gly Ser  
 20 25 30  
 Cys Lys Met Leu Gly Pro Val Leu Glu Glu Val Glu Ser Glu Val Gly  
 35 40 45  
 Ser Gly Val Val Ile Gly Lys Leu Asn Val Asp Asp Gln Asp Leu  
 50 55 60  
 Ala Val Glu Phe Asn Val Ala Ser Ile Pro Thr Leu Ile Val Phe Lys  
 65 70 75 80  
 Asp Gly Lys Glu Val Asp Arg Ser Ile Gly Phe Val Asp Lys Ser Lys  
 85 90 95  
 Ile Leu Thr Leu Ile Gln Lys Asn Ala  
 100 105

<210> 146  
 <211> 104  
 <212> PRT  
 <213> Bos taurus

<400> 146  
 Val Lys Gln Ile Glu Ser Lys Tyr Ala Phe Gln Glu Ala Leu Asn Ser  
 1 5 10 15  
 Ala Gly Glu Lys Leu Val Val Val Asp Phe Ser Ala Thr Trp Cys Gly  
 20 25 30  
 Pro Cys Lys Met Ile Lys Pro Phe His Ser Leu Ser Glu Lys Tyr  
 35 40 45  
 Ser Asn Val Val Phe Leu Glu Val Asp Val Asp Asp Cys Gln Asp Val  
 50 55 60  
 Ala Ala Glu Cys Glu Val Lys Cys Met Pro Thr Phe Gln Phe Phe Lys  
 65 70 75 80  
 Lys Gly Gln Lys Val Gly Glu Phe Ser Gly Ala Asn Lys Glu Lys Leu  
 85 90 95  
 Glu Ala Thr Ile Asn Glu Leu Ile  
 100

<210> 147  
 <211> 166  
 <212> PRT  
 <213> Bos taurus

<400> 147  
 Met Ala Gln Arg Leu Leu Leu Arg Arg Phe Leu Thr Ser Ile Ile Ser  
 1 5 10 15  
 Gly Lys Pro Ser Gln Ser Arg Trp Ala Pro Val Ala Ser Arg Ala Leu  
 20 25 30  
 Lys Thr Pro Gln Tyr Ser Pro Gly Tyr Leu Thr Val Thr Pro Ser Gln  
 35 40 45  
 Ala Arg Ser Ile Tyr Thr Thr Arg Val Cys Ser Thr Thr Phe Asn Ile  
 50 55 60  
 Gln Asp Gly Pro Asp Phe Gln Asp Arg Val Val Asn Ser Glu Thr Pro  
 65 70 75 80  
 Val Val Val Asp Phe His Ala Gln Trp Cys Gly Pro Cys Lys Ile Leu  
 85 90 95  
 Gly Pro Arg Leu Glu Lys Val Val Ala Lys Gln His Gly Lys Val Val  
 100 105 110  
 Met Ala Lys Val Asp Ile Asp Asp His Thr Asp Leu Ala Leu Glu Tyr  
 115 120 125  
 Glu Val Ser Ala Val Pro Thr Val Leu Ala Met Lys Asn Gly Asp Val  
 130 135 140  
 Val Asp Lys Phe Val Gly Ile Lys Asp Glu Asp Gln Leu Glu Ala Phe  
 145 150 155 160  
 Leu Lys Lys Leu Ile Gly  
 165

<210> 148  
 <211> 115  
 <212> PRT  
 <213> *Caenorhabditis elegans*

<400> 148  
 Met Leu Lys Arg Cys Asn Phe Lys Asn Gln Val Lys Tyr Phe Gln Ser  
 1 5 10 15  
 Asp Phe Glu Gln Leu Ile Arg Gln His Pro Glu Lys Ile Ile Ile Leu  
 20 25 30  
 Asp Phe Tyr Ala Thr Trp Cys Gly Pro Cys Lys Ala Ile Ala Pro Leu  
 35 40 45  
 Tyr Lys Glu Leu Ala Thr Thr His Lys Gly Ile Ile Phe Cys Lys Val  
 50 55 60  
 Asp Val Asp Glu Ala Glu Asp Leu Cys Ser Lys Tyr Asp Val Lys Met  
 65 70 75 80  
 Met Pro Thr Phe Ile Phe Thr Lys Asn Gly Asp Ala Ile Glu Ala Leu  
 85 90 95  
 Glu Gly Cys Val Glu Asp Glu Leu Arg Gln Lys Val Leu Glu His Val  
 100 105 110  
 Ser Ala Gln  
 115

<210> 149  
 <211> 20  
 <212> PRT  
 <213> *Canis familiaris*

<400> 149  
 Val Lys Gln Ile Glu Phe Lys Tyr Ala Phe Gln Glu Ala Leu Asn Ser  
 1 5 10 15  
 Ala Gly Asp Lys  
 20

<210> 150  
 <211> 104  
 <212> PRT  
 <213> *Gallus gallus*

<400> 150  
 Val Lys Ser Val Gly Asn Leu Ala Asp Phe Glu Ala Glu Leu Lys Ala  
 1 5 10 15  
 Ala Gly Glu Lys Leu Val Val Val Asp Phe Ser Ala Thr Trp Cys Gly  
 20 25 30  
 Pro Cys Lys Met Ile Lys Pro Phe His Ser Leu Cys Asp Lys Phe  
 35 40 45  
 Gly Asp Val Val Phe Ile Glu Ile Asp Val Asp Asp Ala Gln Asp Val  
 50 55 60  
 Ala Thr His Cys Asp Val Lys Cys Met Pro Thr Phe Gln Phe Tyr Lys  
 65 70 75 80  
 Asn Gly Lys Lys Val Gln Glu Phe Ser Gly Ala Asn Lys Glu Lys Leu  
 85 90 95  
 Glu Glu Thr Ile Lys Ser Leu Val  
 100

<210> 151  
 <211> 107  
 <212> PRT  
 <213> *Drosophila melanogaster*

<400> 151  
 Met Ala Ser Val Arg Thr Met Asn Asp Tyr His Lys Arg Ile Glu Ala  
 1 5 10 15

Ala	Asp	Asp	Lys	Leu	Ile	Val	Leu	Asp	Phe	Tyr	Ala	Thr	Trp	Cys	Gly
			20					25					30		
Pro	Cys	Lys	Glu	Met	Glu	Ser	Thr	Val	Lys	Ser	Leu	Ala	Arg	Lys	Tyr
		35					40					45			
Ser	Ser	Lys	Ala	Val	Val	Leu	Lys	Ile	Asp	Val	Asp	Lys	Phe	Glu	Glu
		50				55					60				
Leu	Thr	Glu	Arg	Tyr	Lys	Val	Arg	Ser	Met	Pro	Thr	Phe	Val	Phe	Leu
65					70					75					80
Arg	Gln	Asn	Arg	Arg	Leu	Ala	Ser	Phe	Ala	Gly	Ala	Asp	Glu	His	Lys
			85						90					95	
Leu	Thr	Asn	Met	Met	Ala	Lys	Leu	Val	Lys	Ala					
			100					105							

<210> 152  
 <211> 104  
 <212> PRT  
 <213> Homo sapien

Val	Lys	Gln	Ile	Glu	Ser	Lys	Thr	Ala	Phe	Gln	Glu	Ala	Leu	Asp	Ala
1				5					10					15	
Ala	Gly	Asp	Lys	Leu	Val	Val	Val	Asp	Phe	Ser	Ala	Thr	Trp	Cys	Gly
			20					25					30		
Pro	Cys	Lys	Met	Ile	Lys	Pro	Phe	Phe	His	Ser	Leu	Ser	Glu	Lys	Tyr
		35					40					45			
Ser	Asn	Val	Ile	Phe	Leu	Glu	Val	Asp	Val	Asp	Asp	Cys	Gln	Asp	Val
		50				55					60				
Ala	Ser	Glu	Cys	Glu	Val	Lys	Cys	Met	Pro	Thr	Phe	Gln	Phe	Phe	Lys
65					70					75					80
Lys	Gly	Gln	Lys	Val	Gly	Glu	Phe	Ser	Gly	Ala	Asn	Lys	Glu	Lys	Leu
				85					90					95	
Glu	Ala	Thr	Ile	Asn	Glu	Leu	Val								
			100												

<210> 153  
 <211> 166  
 <212> PRT  
 <213> Homo sapien

Met	Ala	Gln	Arg	Leu	Leu	Leu	Arg	Arg	Phe	Leu	Ala	Ser	Val	Ile	Ser
1				5					10					15	
Arg	Lys	Pro	Ser	Gln	Gly	Gln	Trp	Pro	Pro	Leu	Thr	Ser	Lys	Ala	Leu
			20					25					30		
Gln	Thr	Pro	Gln	Cys	Ser	Pro	Gly	Gly	Leu	Thr	Val	Thr	Pro	Asn	Pro
		35					40					45			
Ala	Arg	Thr	Ile	Tyr	Thr	Thr	Arg	Ile	Ser	Leu	Thr	Thr	Phe	Asn	Ile
		50				55					60				
Gln	Asp	Gly	Pro	Asp	Phe	Gln	Asp	Arg	Val	Val	Asn	Ser	Glu	Thr	Pro
65					70					75					80
Val	Val	Val	Asp	Phe	His	Ala	Gln	Trp	Cys	Gly	Pro	Cys	Lys	Ile	Leu
				85					90					95	
Gly	Pro	Arg	Leu	Glu	Lys	Met	Val	Ala	Lys	Gln	His	Gly	Lys	Val	Val
			100					105					110		
Met	Ala	Lys	Val	Asp	Ile	Asp	Asp	His	Thr	Asp	Leu	Ala	Ile	Glu	Tyr
		115					120					125			
Glu	Val	Ser	Ala	Val	Pro	Thr	Val	Leu	Ala	Met	Lys	Asn	Gly	Asp	Val
		130				135					140				
Val	Asp	Lys	Phe	Val	Gly	Ile	Lys	Asp	Glu	Asp	Gln	Leu	Glu	Ala	Phe
145					150					155					160
Leu	Lys	Lys	Leu	Ile	Gly										
				165											

<210> 154

<211> 104  
 <212> PRT  
 <213> Macaca mulatta

<400> 154  
 Val Lys Gln Ile Glu Ser Lys Ala Ala Phe Gln Glu Ala Leu Asp Asp  
 1 5 10 15  
 Ala Gly Asp Lys Leu Val Val Val Asp Phe Ser Ala Thr Trp Cys Gly  
 20 25 30  
 Pro Cys Lys Met Ile Lys Pro Phe Phe His Ser Leu Ser Glu Lys Tyr  
 35 40 45  
 Ser Asn Val Val Phe Leu Glu Val Asp Val Asp Asp Cys Gln Asp Val  
 50 55 60  
 Ala Ser Glu Cys Glu Val Lys Cys Met Pro Thr Phe Gln Phe Phe Lys  
 65 70 75 80  
 Lys Gly Gln Lys Val Gly Glu Phe Ser Gly Ala Asn Lys Glu Lys Leu  
 85 90 95  
 Glu Ala Thr Ile Asn Glu Leu Val  
 100

<210> 155  
 <211> 104  
 <212> PRT  
 <213> Mus musculus

<400> 155  
 Val Lys Leu Ile Glu Ser Lys Glu Ala Phe Gln Glu Ala Leu Ala Ala  
 1 5 10 15  
 Ala Gly Asp Lys Leu Val Val Val Asp Phe Ser Ala Thr Trp Cys Gly  
 20 25 30  
 Pro Cys Lys Met Ile Lys Pro Phe Phe His Ser Leu Cys Asp Lys Tyr  
 35 40 45  
 Ser Asn Val Val Phe Leu Glu Val Asp Val Asp Asp Cys Gln Asp Val  
 50 55 60  
 Ala Ala Asp Cys Glu Val Lys Cys Met Pro Thr Phe Gln Phe Tyr Lys  
 65 70 75 80  
 Lys Gly Gln Lys Val Gly Glu Phe Ser Gly Ala Asn Lys Glu Lys Leu  
 85 90 95  
 Glu Ala Ser Ile Thr Glu Tyr Ala  
 100

<210> 156  
 <211> 166  
 <212> PRT  
 <213> Mus musculus

<400> 156  
 Met Ala Gln Arg Leu Leu Leu Gly Arg Phe Leu Thr Ser Val Ile Ser  
 1 5 10 15  
 Arg Lys Pro Pro Gln Gly Val Trp Ala Ser Leu Thr Ser Lys Thr Leu  
 20 25 30  
 Gln Thr Pro Gln Tyr Asn Ala Gly Gly Leu Thr Val Met Pro Ser Pro  
 35 40 45  
 Ala Arg Thr Val His Thr Thr Arg Val Cys Leu Thr Thr Phe Asn Val  
 50 55 60  
 Gln Asp Gly Pro Asp Phe Gln Asp Arg Val Val Asn Ser Glu Thr Pro  
 65 70 75 80  
 Val Val Val Asp Phe His Ala Gln Trp Cys Gly Pro Cys Lys Ile Leu  
 85 90 95  
 Gly Pro Arg Leu Glu Lys Met Val Ala Lys Gln His Gly Lys Val Val  
 100 105 110  
 Met Ala Lys Val Asp Ile Asp Asp His Thr Asp Leu Ala Ile Glu Tyr  
 115 120 125  
 Glu Val Ser Ala Val Pro Thr Val Leu Ala Ile Lys Asn Gly Asp Val  
 130 135 140

Val Asp Lys Phe Val Gly Ile Lys Asp Glu Asp Gln Leu Glu Ala Phe  
 145 150 155 160  
 Leu Lys Lys Leu Ile Gly  
 165

<210> 157  
 <211> 33  
 <212> PRT  
 <213> Sus scrofa

<400> 157  
 Val Lys Gln Ile Glu Ser Lys Tyr Ala Phe Gln Glu Ala Leu Asn Ser  
 1 5 10 15  
 Ala Gly Glu Lys Leu Val Val Val Asp Phe Ser Ala Thr Trp Cys Gly  
 20 25 30  
 Pro

<210> 158  
 <211> 104  
 <212> PRT  
 <213> Oryctolagus cuniculus

<400> 158  
 Val Lys Gln Ile Glu Ser Lys Ser Ala Phe Gln Glu Val Leu Asp Ser  
 1 5 10 15  
 Ala Gly Asp Lys Leu Val Val Val Asp Phe Ser Ala Thr Trp Cys Gly  
 20 25 30  
 Pro Cys Lys Met Ile Lys Pro Phe His Ala Leu Ser Glu Lys Phe  
 35 40 45  
 Asn Asn Val Val Phe Ile Glu Val Asp Val Asp Asp Cys Lys Asp Ile  
 50 55 60  
 Ala Ala Glu Cys Glu Val Lys Cys Met Pro Thr Phe Gln Phe Phe Lys  
 65 70 75 80  
 Lys Gly Gln Lys Val Gly Glu Phe Ser Gly Ala Asn Lys Glu Lys Leu  
 85 90 95  
 Glu Ala Thr Ile Asn Glu Leu Leu  
 100

<210> 159  
 <211> 104  
 <212> PRT  
 <213> Rattus norvegicus

<400> 159  
 Val Lys Leu Ile Glu Ser Lys Glu Ala Phe Gln Glu Ala Leu Ala Ala  
 1 5 10 15  
 Ala Gly Asp Lys Leu Val Val Val Asp Phe Ser Ala Thr Trp Cys Gly  
 20 25 30  
 Pro Cys Lys Met Ile Lys Pro Phe Phe His Ser Leu Cys Asp Lys Tyr  
 35 40 45  
 Ser Asn Val Val Phe Leu Glu Val Asp Val Asp Asp Cys Gln Asp Val  
 50 55 60  
 Ala Ala Asp Cys Glu Val Lys Cys Met Pro Thr Phe Gln Phe Tyr Lys  
 65 70 75 80  
 Lys Gly Gln Lys Val Gly Glu Phe Ser Gly Ala Asn Lys Glu Lys Leu  
 85 90 95  
 Glu Ala Thr Ile Thr Glu Phe Ala  
 100

<210> 160  
 <211> 166  
 <212> PRT

<213> Rattus norvegicus

<400> 160

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Met Ala Gln Arg Leu Leu Leu Arg Arg Phe Leu Thr Ser Val Ile Ser
 1      5      10      15
Arg Lys Pro Pro Gln Gly Val Trp Ala Ser Leu Thr Ser Thr Ser Leu
      20      25      30
Gln Thr Pro Pro Tyr Asn Ala Gly Gly Leu Thr Gly Thr Pro Ser Pro
      35      40      45
Ala Arg Thr Phe His Thr Thr Arg Val Cys Ser Thr Thr Phe Asn Val
      50      55      60
Gln Asp Gly Pro Asp Phe Gln Asp Arg Val Val Asn Ser Glu Thr Pro
65      70      75      80
Val Val Val Asp Phe His Ala Gln Trp Cys Gly Pro Cys Lys Ile Leu
      85      90      95
Gly Pro Arg Leu Glu Lys Met Val Ala Lys Gln His Gly Lys Val Val
      100      105      110
Met Ala Lys Val Asp Ile Asp Asp His Thr Asp Leu Ala Ile Glu Tyr
      115      120      125
Glu Val Ser Ala Val Pro Thr Val Leu Ala Ile Lys Asn Gly Asp Val
      130      135      140
Val Asp Lys Phe Val Gly Ile Lys Asp Glu Asp Gln Leu Glu Ala Phe
145      150      155      160
Leu Lys Lys Leu Ile Gly
      165

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<210> 161

<211> 104

<212> PRT

<213> Ovis aries

<400> 161

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Val Lys Gln Ile Glu Ser Lys Tyr Ala Phe Gln Glu Ala Leu Asn Ser
 1      5      10      15
Ala Gly Glu Lys Leu Val Val Val Asp Phe Ser Ala Thr Trp Cys Gly
      20      25      30
Pro Cys Lys Met Ile Lys Pro Phe Phe His Ser Leu Ser Glu Lys Tyr
      35      40      45
Ser Asn Val Val Phe Leu Glu Val Asp Val Asp Asp Cys Gln Asp Val
      50      55      60
Ala Ala Glu Cys Glu Val Lys Cys Met Pro Thr Phe Gln Phe Phe Lys
65      70      75      80
Lys Gly Gln Lys Val Ser Glu Phe Ser Gly Ala Asn Lys Glu Lys Leu
      85      90      95
Glu Ala Thr Ile Asn Glu Leu Ile
      100

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<210> 162

<211> 261

<212> PRT

<213> Arabidopsis thaliana

<400> 162

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Met Ala Arg Leu Val Phe Ser Leu Asn Leu Pro Ser Ser His Gly Phe
 1      5      10      15
Asn Leu Ser Pro Arg Asn Leu Gln Ser Phe Phe Val Thr Gln Thr Gly
      20      25      30
Ala Pro Arg Phe Arg Ala Val Arg Cys Lys Pro Asn Pro Glu Ser Ser
      35      40      45
Glu Thr Lys Gln Glu Lys Leu Val Ile Asp Asn Gly Glu Thr Ser Ser
      50      55      60
Ala Ser Lys Glu Val Glu Ser Ser Ser Ser Val Ala Asp Ser Ser Ser
65      70      75      80
Ser Ser Ser Ser Gly Phe Pro Glu Ser Pro Asn Lys Asp Ile Asn Arg
      85      90      95

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Arg	Val	Ala	Ala	Val	Thr	Val	Ile	Ala	Ala	Leu	Ser	Leu	Phe	Val	Ser
		100						105					110		
Thr	Arg	Leu	Asp	Phe	Gly	Ile	Ser	Leu	Lys	Asp	Leu	Thr	Ala	Ser	Ala
		115					120					125			
Leu	Pro	Tyr	Glu	Glu	Ala	Leu	Ser	Asn	Gly	Lys	Pro	Thr	Val	Val	Glu
		130					135				140				
Phe	Tyr	Ala	Asp	Trp	Cys	Glu	Val	Cys	Arg	Glu	Leu	Ala	Pro	Asp	Val
145					150				155						160
Tyr	Lys	Ile	Glu	Gln	Gln	Tyr	Lys	Asp	Lys	Val	Asn	Phe	Val	Met	Leu
				165				170						175	
Asn	Val	Asp	Asn	Thr	Lys	Trp	Glu	Gln	Glu	Leu	Asp	Glu	Phe	Gly	Val
			180					185					190		
Glu	Gly	Ile	Pro	His	Phe	Ala	Phe	Leu	Asp	Arg	Glu	Gly	Asn	Glu	Glu
		195					200					205			
Gly	Asn	Val	Val	Gly	Arg	Leu	Pro	Arg	Gln	Tyr	Leu	Val	Glu	Asn	Val
		210				215					220				
Asn	Ala	Leu	Ala	Ala	Gly	Lys	Gln	Ser	Ile	Pro	Tyr	Ala	Arg	Ala	Val
225					230					235					240
Gly	Gln	Tyr	Ser	Ser	Ser	Glu	Ser	Arg	Lys	Val	His	Gln	Val	Thr	Asp
				245					250					255	
Pro	Leu	Ser	His	Gly											
			260												

<210> 163  
 <211> 140  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 163															
Met	Gly	Ser	Cys	Val	Ser	Lys	Gly	Lys	Gly	Asp	Asp	Asp	Ser	Val	His
1				5					10					15	
Asn	Val	Glu	Phe	Ser	Gly	Gly	Asn	Val	His	Leu	Ile	Thr	Thr	Lys	Glu
			20				25						30		
Ser	Trp	Asp	Asp	Lys	Leu	Ala	Glu	Ala	Asp	Arg	Asp	Gly	Lys	Ile	Val
		35					40					45			
Val	Ala	Asn	Phe	Ser	Ala	Thr	Trp	Cys	Gly	Pro	Cys	Lys	Ile	Val	Ala
		50				55					60				
Pro	Phe	Phe	Ile	Glu	Leu	Ser	Glu	Lys	His	Ser	Ser	Leu	Met	Phe	Leu
65					70				75						80
Leu	Val	Asp	Val	Asp	Glu	Leu	Ser	Asp	Phe	Ser	Ser	Ser	Trp	Asp	Ile
				85					90					95	
Lys	Ala	Thr	Pro	Thr	Phe	Phe	Phe	Leu	Lys	Asn	Gly	Gln	Gln	Ile	Gly
			100					105					110		
Lys	Leu	Val	Gly	Ala	Asn	Lys	Pro	Glu	Leu	Gln	Lys	Lys	Val	Thr	Ser
		115					120					125			
Ile	Ile	Asp	Ser	Val	Pro	Glu	Ser	Pro	Gln	Arg	Pro				
		130				135					140				

<210> 164  
 <211> 186  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 164															
Met	Ser	Glu	Ile	Val	Asn	Leu	Ser	Ser	Ser	Leu	Arg	Ser	Leu	Asn	Pro
1				5					10					15	
Lys	Ile	Ser	Pro	Leu	Val	Pro	Pro	Tyr	Arg	Gln	Thr	Ser	Ser	Ser	Phe
			20					25					30		
Ser	Arg	Pro	Arg	Asn	Phe	Lys	Tyr	His	Ser	Phe	Thr	Asp	Lys	Ile	Cys
		35					40					45			
Leu	Ala	Ala	Glu	Arg	Ile	Arg	Ala	Val	Asp	Ile	Gln	Lys	Gln	Asp	Gly
		50				55					60				
Gly	Leu	Gln	Glu	Leu	Asp	Asp	Ser	Pro	Val	Ser	Val	Glu	Leu	Gly	Pro
65					70				75						80
Ile	Cys	Gly	Glu	Ser	His	Phe	Asp	Gln	Val	Met	Glu	Asp	Ala	Gln	Lys



				85					90					95			
Leu	Gly	Glu	Ser	Val	Val	Ile	Val	Trp	Met	Ala	Ala	Trp	Cys	Arg	Lys		
			100					105					110				
Cys	Ile	Tyr	Leu	Lys	Pro	Lys	Leu	Glu	Lys	Leu	Ala	Ala	Glu	Phe	Tyr		
		115					120						125				
Pro	Arg	Leu	Arg	Phe	Tyr	His	Val	Asp	Val	Asn	Ala	Val	Pro	Tyr	Arg		
		130				135					140						
Leu	Val	Ser	Arg	Ala	Gly	Val	Thr	Leu	Trp	Arg	Asp	Gly	Gln	Lys	Gln		
145					150					155					160		
Ala	Glu	Val	Ile	Gly	Gly	His	Lys	Ala	His	Phe	Val	Val	Asn	Glu	Val		
				165					170					175			
Arg	Glu	Met	Ile	Glu	Asn	Asp	Ser	Ile	Thr								
			180					185									

<210> 165  
 <211> 207  
 <212> PRT  
 <213> Arabidopsis thaliana

Met	Glu	Asn	Met	Ser	Asn	Leu	Thr	Ser	Lys	Phe	Leu	Leu	Asn	Pro	Leu		
1				5				10					15				
Asn	Val	His	Lys	His	Cys	Ala	Val	Ser	Asp	Glu	Asn	Gly	Asp	Arg	Lys		
			20					25					30				
Ser	His	Val	Leu	Lys	Gln	Val	Cys	Ser	Cys	Ile	Cys	Cys	Cys	Asn	Arg		
		35				40						45					
Arg	Asn	Lys	Thr	Gln	Ala	Arg	Ser	Gln	Lys	Gly	Ser	Tyr	Phe	Ile	Lys		
	50					55					60						
Gly	Lys	Val	His	Pro	Val	Ser	Arg	Met	Glu	Lys	Trp	Glu	Glu	Lys	Ile		
65				70					75					80			
Thr	Glu	Ala	Asn	Ser	His	Gly	Lys	Ile	Ile	Ala	Arg	His	Asp	Leu	Ile		
			85					90					95				
Leu	Cys	Asn	Met	Glu	Gln	Leu	Val	Val	Asn	Phe	Lys	Ala	Ser	Trp	Cys		
			100					105					110				
Leu	Pro	Ser	Lys	Thr	Ile	Leu	Pro	Ile	Tyr	Gln	Glu	Leu	Ala	Ser	Thr		
		115					120					125					
Tyr	Thr	Ser	Met	Ile	Phe	Val	Thr	Ile	Asp	Val	Glu	Glu	Leu	Ala	Ile		
	130					135					140						
Ser	Lys	Leu	Ser	Asp	Leu	Gly	Val	Lys	Ile	Cys	Leu	Ile	Gln	Glu	Phe		
145					150					155					160		
Ser	His	Glu	Trp	Asn	Val	Asp	Ala	Thr	Pro	Thr	Val	Val	Phe	Leu	Lys		
			165					170						175			
Asp	Gly	Arg	Gln	Met	Asp	Lys	Leu	Val	Gly	Gly	Asp	Ala	Ala	Glu	Leu		
			180					185					190				
Gln	Lys	Lys	Thr	Ala	Ala	Ala	Ala	Asn	Leu	Leu	Leu	Arg	Gln	Ser			
		195					200					205					

<210> 166  
 <211> 175  
 <212> PRT  
 <213> Arabidopsis thaliana

Met	Leu	Ile	Pro	His	Ala	Val	Ser	Phe	Ala	Phe	Thr	Tyr	Leu	Arg	Asn		
1				5				10					15				
Ser	Ala	Asn	Pro	Asp	Gln	Asn	Arg	Glu	Val	Ile	Ser	Ile	His	Ser	Thr		
			20					25					30				
Ser	Glu	Leu	Glu	Ala	Lys	Thr	Lys	Ala	Ala	Lys	Lys	Ala	Ser	Arg	Leu		
		35				40						45					
Leu	Ile	Leu	Tyr	Phe	Thr	Ala	Thr	Trp	Cys	Gly	Pro	Cys	Arg	Tyr	Met		
	50					55				60							
Ser	Pro	Leu	Tyr	Ser	Asn	Leu	Ala	Thr	Gln	His	Ser	Arg	Val	Val	Phe		
65				70					75					80			
Leu	Lys	Val	Asp	Ile	Asp	Lys	Ala	Asn	Asp	Val	Ala	Ala	Ser	Trp	Asn		
				85				90					95				

Ile	Ser	Ser	Val	Pro	Thr	Phe	Cys	Phe	Ile	Arg	Asp	Gly	Lys	Glu	Val
			100					105					110		
Asp	Lys	Val	Val	Gly	Ala	Asp	Lys	Gly	Ser	Leu	Glu	Gln	Lys	Ile	Ala
		115					120					125			
Gln	His	Ser	Ser	Ser	Lys	Ala	Arg	Tyr	Ile	Pro	Val	Phe	Ile	Lys	Tyr
		130				135					140				
His	Ser	Asp	Leu	Leu	Leu	Leu	Val	Asn	Glu	Glu	Thr	Pro	Thr	Ser	Asn
145					150					155					160
Gln	Lys	Leu	Lys	Thr	Lys	Thr	Gly	Asp	Trp	Phe	His	Ile	Asn	Leu	
				165					170					175	

<210> 167  
 <211> 132  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 167

Met	Arg	Lys	Gln	Glu	Ser	Glu	Gly	Ala	Asn	Leu	Glu	Phe	Glu	Ser	Lys
1				5					10					15	
Ser	Asn	Asp	Asn	Gly	Asn	Val	Lys	Ile	Ala	Pro	Asn	Asp	Gln	Ser	Phe
			20					25					30		
Leu	Thr	Ile	Leu	Asp	Asp	Ile	Lys	Ser	Ser	Lys	Ser	Pro	Ala	Val	Ile
		35					40					45			
Asn	Tyr	Gly	Ala	Ser	Trp	Tyr	Thr	Leu	Phe	Ser	Val	Phe	Thr	Ile	Thr
	50					55					60				
Leu	Phe	Met	Leu	Ile	Lys	Cys	Ser	Met	Lys	Cys	Leu	Asn	Glu	Asn	Gly
65					70					75					80
Phe	Val	Leu	Lys	Leu	Ser	Asp	Ile	Asp	Glu	Cys	Pro	Glu	Thr	Thr	Arg
				85					90					95	
His	Ile	Arg	Tyr	Thr	Pro	Thr	Phe	Gln	Phe	Tyr	Arg	Asp	Gly	Glu	Lys
			100					105					110		
Val	Asp	Glu	Met	Phe	Gly	Ala	Gly	Glu	Gln	Arg	Leu	His	Asp	Arg	Leu
		115					120					125			
Trp	Leu	His	Ser												
															130

<210> 168  
 <211> 151  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 168

Met	Ala	Ser	Ile	Ser	Leu	Ser	Ser	Ser	Thr	Val	Pro	Ser	Leu	Asn	Ser
1				5					10					15	
Lys	Glu	Ser	Ser	Gly	Val	Ser	Ala	Phe	Ala	Ser	Arg	Ser	Ile	Ser	Ala
			20					25					30		
Val	Lys	Phe	Gln	Phe	Pro	Val	Arg	Arg	Ile	Glu	Ala	Lys	Lys	Gln	Thr
		35					40					45			
Phe	Asp	Ser	Phe	Glu	Asp	Leu	Val	Asn	Ser	Asp	Lys	Pro	Val	Leu	
	50					55				60					
Val	Asp	Tyr	Tyr	Ala	Thr	Trp	Cys	Gly	Pro	Cys	Gln	Phe	Met	Val	Pro
65					70					75					80
Ile	Leu	Asn	Glu	Val	Ser	Glu	Thr	Leu	Lys	Asp	Lys	Ile	Gln	Val	Val
				85					90					95	
Lys	Ile	Asp	Thr	Glu	Lys	Tyr	Pro	Ser	Ile	Ala	Asn	Lys	Tyr	Lys	Ile
			100					105					110		
Glu	Ala	Leu	Pro	Thr	Phe	Ile	Leu	Phe	Lys	Asp	Gly	Glu	Pro	Cys	Asp
		115					120					125			
Arg	Phe	Glu	Gly	Ala	Leu	Thr	Ala	Lys	Gln	Leu	Ile	Gln	Arg	Ile	Glu
	130					135					140				
Asp	Ser	Leu	Lys	Val	Lys	Pro									
145					150										

<210> 169

<211> 236  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 169  
 Met Ala Gly Val Val Arg Leu Thr Thr Thr Ser Val Gln Ala Ile Arg  
 1 5 10 15  
 Val Ser Ser Ser Phe Ser Ser Phe Ala Thr Ala Leu Asn Pro Leu Gln  
 20 25 30  
 Pro Cys Leu Pro Pro Asn Ser Asn Leu Asn Ser Asp Lys Arg Leu Arg  
 35 40 45  
 Leu Leu Ser Ser Ser Pro Ser Cys Ser Ser Ser His Tyr His Pro Ser  
 50 55 60  
 Ser Gly Leu Gly Ser His Leu Pro Leu Arg Arg Pro Lys Ser Gln Val  
 65 70 75 80  
 Val Arg Val Lys Val Asp Glu Asn Val Ala Glu Thr Glu Pro Pro Lys  
 85 90 95  
 Trp Trp Glu Arg Asn Ala Pro Asn Met Val Asp Ile His Ser Thr Glu  
 100 105 110  
 Glu Phe Leu Ser Ala Leu Ser Gly Ala Gly Glu Arg Leu Val Ile Val  
 115 120 125  
 Glu Phe Tyr Gly Thr Trp Cys Ala Ser Cys Arg Ala Leu Phe Pro Lys  
 130 135 140  
 Leu Cys Lys Thr Ala Val Glu His Pro Asp Ile Val Phe Leu Lys Val  
 145 150 155 160  
 Asn Phe Asp Glu Asn Lys Pro Met Cys Lys Ser Leu Asn Val Arg Val  
 165 170 175  
 Leu Pro Phe Phe His Phe Tyr Arg Gly Ala Asp Gly Gln Leu Glu Ser  
 180 185 190  
 Phe Ser Cys Ser Leu Ala Lys Val Lys Lys Ala Ile Ser Val Ser Pro  
 195 200 205  
 Phe Pro Gln Leu Glu Leu Gly Ile Thr Leu Gln Thr Lys Arg Thr Thr  
 210 215 220  
 Ser Leu Phe Phe Phe Asp Arg Ile Tyr Gln Ile Leu  
 225 230 235

<210> 170  
 <211> 131  
 <212> PRT  
 <213> Hordeum bulbosum

<400> 170  
 Met Gly Gly Cys Val Gly Lys Asp Arg Ser Ile Val Glu Asp Lys Leu  
 1 5 10 15  
 Asp Phe Lys Gly Gly Asn Val His Val Ile Thr Thr Lys Glu Asp Trp  
 20 25 30  
 Asp Gln Lys Val Ala Glu Ala Asn Lys Asp Gly Lys Ile Val Val Ala  
 35 40 45  
 Asn Phe Ser Ala Ser Trp Cys Gly Pro Cys Arg Val Ile Ala Pro Val  
 50 55 60  
 Tyr Ala Glu Met Ser Lys Thr Tyr Pro Gln Leu Met Phe Leu Thr Ile  
 65 70 75 80  
 Asp Val Asp Asp Leu Met Asp Phe Gly Ser Thr Trp Asp Ile Arg Ala  
 85 90 95  
 Thr Pro Thr Phe Phe Phe Leu Lys Asn Gly Gln Gln Ile Asp Lys Leu  
 100 105 110  
 Val Gly Ala Asn Lys Pro Glu Leu Glu Lys Lys Val Gln Ala Leu Gly  
 115 120 125  
 Asp Gly Ser  
 130

<210> 171  
 <211> 131  
 <212> PRT  
 <213> Lolium perenne

<400> 171  
 Met Gly Gly Cys Val Gly Lys Asp Arg Ser Ile Val Glu Asp Lys Leu  
 1 5 10 15  
 Asp Phe Lys Gly Gly Asn Val His Val Ile Thr Thr Lys Glu Asp Trp  
 20 25 30  
 Asp Gln Lys Val Ala Glu Ala Asn Lys Asp Gly Lys Ile Val Val Ala  
 35 40 45  
 Asn Phe Ser Ala Ser Trp Cys Gly Pro Cys Arg Val Ile Ala Pro Val  
 50 55 60  
 Tyr Ala Glu Met Ser Lys Thr Tyr Pro Gln Leu Met Phe Leu Thr Ile  
 65 70 75 80  
 Asp Val Asp Asp Leu Met Asp Phe Ser Ser Thr Trp Asp Ile Arg Ala  
 85 90 95  
 Thr Pro Thr Phe Phe Phe Leu Lys Asn Gly Gln Leu Ile Asp Lys Leu  
 100 105 110  
 Val Gly Ala Asn Arg Pro Glu Leu Glu Lys Lys Val Gln Ala Ile Gly  
 115 120 125  
 Asp Gly Ser  
 130

<210> 172  
 <211> 131  
 <212> PRT  
 <213> Oryza sativa

<400> 172  
 Met Gly Ser Cys Val Gly Lys Glu Arg Ser Asp Glu Glu Asp Lys Ile  
 1 5 10 15  
 Asp Phe Lys Gly Gly Asn Val His Val Ile Ser Asn Lys Glu Asn Trp  
 20 25 30  
 Asp His Lys Ile Ala Glu Ala Asn Lys Asp Gly Lys Ile Val Ile Ala  
 35 40 45  
 Asn Phe Ser Ala Ala Trp Cys Gly Pro Cys Arg Val Ile Ala Pro Val  
 50 55 60  
 Tyr Ala Glu Met Ser Gln Thr Tyr Pro Gln Phe Met Phe Leu Thr Ile  
 65 70 75 80  
 Asp Val Asp Glu Leu Met Asp Phe Ser Ser Ser Trp Asp Ile Arg Ala  
 85 90 95  
 Thr Pro Thr Phe Phe Phe Leu Lys Asn Gly Glu Gln Val Asp Lys Leu  
 100 105 110  
 Val Gly Ala Asn Lys Pro Glu Leu Glu Lys Lys Val Ala Ala Leu Ala  
 115 120 125  
 Asp Ser Ala  
 130

<210> 173  
 <211> 296  
 <212> PRT  
 <213> Solanum tuberosum

<400> 173  
 Met Ala Thr Leu Thr Asn Phe Leu Leu Lys Pro Ser Pro Asn Leu Ala  
 1 5 10 15  
 Ser Ile Thr Lys Ile Ser Pro Ser Leu Tyr Ser Asn Phe Pro Phe Glu  
 20 25 30  
 Lys Ser Lys Gln Ser Ile Phe Lys Asn Leu Lys Thr Asn Lys Pro Leu  
 35 40 45  
 Leu Ile Thr Lys Ala Thr Ala Ala Pro Asp Val Glu Lys Lys Val Ala  
 50 55 60  
 Lys Ser Glu Arg Val Gln Lys Val Asn Ser Met Glu Glu Leu Asp Glu  
 65 70 75 80  
 Ala Leu Lys Lys Ala Lys Asn Arg Leu Val Val Val Glu Phe Ala Gly  
 85 90 95  
 Lys Asp Ser Glu Arg Ser Lys Asn Ile Tyr Pro Phe Met Val Asn Leu  
 100 105 110

Ser Lys Thr Cys Asn Asp Val Asp Phe Leu Leu Val Ile Gly Asp Glu  
 115 120 125  
 Thr Glu Lys Thr Lys Ala Leu Cys Arg Arg Glu Lys Ile Asp Lys Val  
 130 135 140  
 Pro His Phe Asn Phe Tyr Lys Ser Met Glu Lys Ile His Glu Glu Glu  
 145 150 155 160  
 Gly Ile Gly Pro Asp Leu Leu Ala Gly Asp Val Leu Tyr Tyr Gly Asp  
 165 170 175  
 Ser His Ser Glu Val Val Gln Leu His Ser Arg Glu Asp Val Glu Lys  
 180 185 190  
 Val Ile Gln Asp His Lys Ile Asp Lys Lys Leu Ile Val Leu Asp Val  
 195 200 205  
 Gly Leu Lys His Cys Gly Pro Cys Val Lys Val Tyr Pro Thr Val Ile  
 210 215 220  
 Lys Leu Ser Lys Gln Met Ala Asp Thr Val Val Phe Ala Arg Met Asn  
 225 230 235 240  
 Gly Asp Glu Asn Asp Ser Cys Met Gln Phe Leu Lys Asp Met Asp Val  
 245 250 255  
 Ile Glu Val Pro Thr Phe Leu Phe Ile Arg Asp Gly Glu Ile Cys Gly  
 260 265 270  
 Arg Tyr Val Gly Ser Gly Lys Gly Leu Ile Gly Glu Ile Leu Arg  
 275 280 285  
 Tyr Gln Gly Val Arg Val Thr Tyr  
 290 295

<210> 174  
 <211> 131  
 <212> PRT  
 <213> Secale cereale

<400> 174  
 Met Gly Gly Cys Val Gly Lys Gly Arg Ser Ile Val Glu Glu Lys Leu  
 1 5 10 15  
 Asp Phe Lys Gly Gly Asn Val His Val Ile Thr Thr Lys Glu Asp Trp  
 20 25 30  
 Asp Gln Lys Ile Glu Glu Ala Asn Lys Asp Gly Lys Ile Val Val Ala  
 35 40 45  
 Asn Phe Ser Ala Ser Trp Cys Gly Pro Cys Arg Val Val Ala Pro Val  
 50 55 60  
 Tyr Ala Gly Met Ser Lys Thr Tyr Pro Gln Leu Met Phe Leu Thr Ile  
 65 70 75 80  
 Asp Val Asp Asp Leu Met Asp Phe Ser Ser Thr Trp Asp Ile Arg Ala  
 85 90 95  
 Thr Pro Thr Phe Phe Phe Leu Lys Asn Gly Gln Gln Ile Asp Lys Leu  
 100 105 110  
 Val Gly Ala Asn Lys Pro Glu Leu Glu Lys Lys Val Gln Ala Leu Gly  
 115 120 125  
 Asp Gly Ser  
 130

<210> 175  
 <211> 119  
 <212> PRT  
 <213> Secale cereale

<400> 175  
 Met Gly Gly Cys Val Gly Lys Gly Arg Ser Ile Val Glu Glu Lys Leu  
 1 5 10 15  
 Asp Phe Lys Gly Gly Asn Val His Val Ile Thr Thr Lys Glu Asp Trp  
 20 25 30  
 Asp Gln Lys Ile Glu Glu Ala Asn Lys Asp Gly Lys Ile Val Val Ala  
 35 40 45  
 Asn Phe Ser Ala Ser Trp Cys Gly Pro Cys Arg Val Ile Ala Pro Val  
 50 55 60  
 Tyr Ala Glu Met Ser Lys Thr Tyr Pro Gln Leu Met Phe Leu Thr Ile



<210> 178  
 <211> 167  
 <212> PRT  
 <213> Haemophilus influenzae

<400> 178  
 Met Lys Ile Lys Lys Leu Leu Lys Asn Gly Leu Ser Leu Phe Leu Thr  
 1 5 10 15  
 Phe Ile Val Ile Thr Ser Ile Leu Asp Phe Val Arg Arg Pro Val Val  
 20 25 30  
 Pro Glu Glu Ile Asn Lys Ile Thr Leu Gln Asp Leu Gln Gly Asn Thr  
 35 40 45  
 Phe Ser Leu Glu Ser Leu Asp Gln Asn Lys Pro Thr Leu Leu Tyr Phe  
 50 55 60  
 Trp Gly Thr Trp Cys Gly Tyr Cys Arg Tyr Thr Ser Pro Ala Ile Asn  
 65 70 75 80  
 Ser Leu Ala Lys Glu Gly Tyr Gln Val Val Ser Val Ala Leu Arg Ser  
 85 90 95  
 Gly Asn Glu Ala Asp Val Asn Asp Tyr Leu Ser Lys Asn Asp Tyr His  
 100 105 110  
 Phe Thr Thr Val Asn Asp Pro Lys Gly Glu Phe Ala Glu Arg Trp Gln  
 115 120 125  
 Ile Asn Val Thr Pro Thr Ile Val Leu Leu Ser Lys Gly Lys Met Asp  
 130 135 140  
 Leu Val Thr Thr Gly Leu Thr Ser Tyr Trp Gly Leu Lys Val Arg Leu  
 145 150 155 160  
 Phe Phe Ala Glu Phe Phe Gly  
 165

<210> 179  
 <211> 163  
 <212> PRT  
 <213> Leishmania major

<400> 179  
 Met Leu Lys Val Ser Ser Lys Glu His Tyr Ala Glu Ile Lys Lys Lys  
 1 5 10 15  
 Ala Glu Asp Ser Leu Gly Leu Val Val His Phe Ser Ala Thr Trp Cys  
 20 25 30  
 Glu Pro Cys Thr Ala Val Asn Glu His Leu Thr Lys Gln Ala Ala Glu  
 35 40 45  
 Tyr Gly Asp Asn Val Val Phe Ala Glu Val Asp Cys Gly Glu Leu Gly  
 50 55 60  
 Asp Val Cys Glu Ala Glu Gly Val Glu Ser Val Pro Phe Val Ala Tyr  
 65 70 75 80  
 Phe Arg Thr Pro Leu Val Gly Asp Asp Arg Arg Val Glu Arg Val Ala  
 85 90 95  
 Asp Val Ala Gly Ala Lys Phe Asp Gln Ile Asp Met Asn Thr His Ser  
 100 105 110  
 Leu Phe Gly Glu Lys Gly Gly Asn Arg Gly Ser Ala Glu Gly Leu Cys  
 115 120 125  
 His Ser Gly Arg Leu Pro Ala Leu Pro His Glu Ala Ala Arg Gly Arg  
 130 135 140  
 Asn Val His His Arg His Pro Ile Ser Ser Ala Leu Arg Leu Tyr Trp  
 145 150 155 160  
 Ser Ala Val

<210> 180  
 <211> 275  
 <212> PRT  
 <213> Mortierella alpina

<400> 180  
 Met Val Ser Asn Asn Tyr Ile Asp Ile Thr Ser Glu Asp Asp Phe Ala

1	Gln	Val	Phe	Gln	Pro	Ser	Ser	Ser	Thr	Val	Tyr	Ala	Leu	Asn	Phe	Trp
			20						25					30		
Ala	Ala	Trp	Ala	Pro	Pro	Cys	Val	Gln	Met	Asn	Glu	Val	Phe	Glu	Glu	
		35					40						45			
Leu	Ala	Ala	Lys	Asn	Ala	Asn	Val	Asn	Phe	Leu	Lys	Ile	Glu	Ala	Glu	
	50					55					60					
Lys	Phe	Pro	Asp	Ile	Ser	Glu	Asp	Tyr	Glu	Ile	Ala	Ala	Val	Pro	Ser	
65					70					75				80		
Phe	Val	Ile	Val	Lys	Glu	Gly	Thr	Val	Val	Asp	Arg	Val	Glu	Gly	Ala	
				85					90				95			
Asn	Ala	Pro	Glu	Leu	Ala	Lys	Val	Ile	Ala	Lys	Tyr	Ser	Lys	Ser	Thr	
		100						105					110			
Ser	Ser	Pro	Leu	Pro	Thr	Gln	Ser	Ser	Thr	Met	Ala	Ala	Ala	Gly	His	
		115					120					125				
Ala	Ala	Pro	Ser	Val	Ala	Pro	Pro	Thr	Met	Ser	Pro	Glu	Glu	Met	Asn	
		130					135				140					
Ala	Arg	Leu	Lys	Glu	Leu	Thr	Ser	Ser	Ser	Ser	Val	Met	Ala	Phe	Ile	
145					150					155					160	
Lys	Gly	Thr	Pro	Thr	Ala	Pro	Arg	Cys	Gln	Phe	Ser	Arg	Gln	Leu	Leu	
				165					170					175		
Glu	Ile	Leu	Thr	Ala	Gln	Asn	Ile	Arg	Phe	Ser	Ser	Phe	Asn	Ile	Leu	
			180					185					190			
Ala	Asp	Asp	Glu	Val	Arg	Gln	Ala	Met	Lys	Thr	Phe	Ser	Asp	Trp	Pro	
		195					200					205				
Thr	Phe	Pro	Gln	Val	Tyr	Val	Lys	Gly	Glu	Phe	Val	Gly	Gly	Leu	Asp	
	210					215					220					
Val	Val	Lys	Glu	Leu	Val	Ala	Ser	Gly	Glu	Phe	Gln	Ala	Leu	Val	Pro	
225					230					235					240	
Ala	Glu	Lys	Asp	Leu	Lys	Thr	Arg	Met	Asp	Glu	Leu	Ile	Arg	Lys	Ala	
			245					250					255			
Pro	Val	Met	Ile	Phe	Ile	Lys	Gly	Ser	Pro	Glu	Thr	Pro	Arg	Cys	Gly	
			260					265					270			
Phe	Ser	Lys														
		275														

<210> 181  
 <211> 160  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 181																
Met	Lys	Arg	Leu	Ile	Leu	Ala	Ala	Ile	Ala	Leu	Ala	Ala	Thr	Phe	Gly	
1				5				10					15			
Ala	His	Thr	Ala	Ser	Gly	Asp	Glu	Leu	Ala	Gly	Trp	Lys	Asp	Asn	Thr	
			20					25					30			
Pro	Gln	Asn	Leu	Gln	Ser	Leu	Lys	Ala	Pro	Val	Arg	Ile	Ala	Asn	Leu	
		35					40					45				
Trp	Ala	Thr	Trp	Cys	Gly	Pro	Cys	Arg	Lys	Glu	Met	Pro	Ala	Met	Ser	
	50					55					60					
Lys	Trp	Tyr	Lys	Ala	Gln	Lys	Lys	Gly	Ser	Val	Asp	Met	Val	Gly	Ile	
65					70					75				80		
Ala	Leu	Asp	Thr	Ser	Asp	Asn	Ile	Gly	Asn	Phe	Leu	Lys	Gln	Thr	Pro	
				85					90					95		
Val	Ser	Tyr	Pro	Ile	Trp	Arg	Tyr	Thr	Gly	Ala	Asn	Ser	Arg	Ser	Phe	
			100					105					110			
Met	Lys	Ser	Tyr	Gly	Asn	Asn	Val	Gly	Val	Leu	Pro	Phe	Thr	Val	Val	
		115					120					125				
Glu	Ala	Pro	Lys	Cys	Gly	Tyr	Arg	Gln	Thr	Ile	Thr	Gly	Glu	Leu	Asn	
		130				135					140					
Glu	Lys	Ser	Leu	Thr	Glu	Ala	Val	Lys	Leu	Ala	His	Ser	Lys	Cys	Arg	
145					150					155					160	

<210> 182  
 <211> 208



<212> PRT  
 <213> Rhizobium loti

<400> 182

Met	Ala	Gly	Ala	Leu	Ala	Gly	Ala	Val	Ala	Val	Tyr	Val	Ser	Glu	Ser
1				5					10					15	
Arg	Ser	Gly	Asn	Ala	Pro	Ala	Arg	Val	Ala	Val	Gly	Gly	Ser	Lys	
			20				25					30			
Asp	Asp	Val	Ala	Cys	Ala	Ala	Lys	Ser	Gly	Arg	Ala	Lys	Lys	Ile	Ala
		35					40					45			
Ala	Ala	Ala	Thr	Gly	Glu	Val	Ala	Ala	Leu	Leu	Pro	Ala	Asp	Pro	Pro
		50				55					60				
Gln	Ser	Met	Lys	Ser	Leu	Ala	Phe	Asn	Gly	Pro	Asp	Gly	Lys	Pro	Met
65					70				75					80	
Thr	Ile	Ala	Asp	His	Ala	Gly	Lys	Thr	Val	Leu	Leu	Asn	Leu	Trp	Ala
				85					90					95	
Thr	Trp	Cys	Ala	Pro	Cys	Arg	Ala	Glu	Met	Pro	Ala	Leu	Asn	Ala	Leu
			100					105					110		
Gln	Lys	Asp	Lys	Gly	Ser	Asp	Ala	Phe	Gln	Val	Ile	Ala	Val	Asn	Val
		115					120					125			
Asp	Ala	Gly	Asp	Asp	Val	Lys	Pro	Lys	Lys	Phe	Leu	Lys	Glu	Thr	Gly
		130				135					140				
Val	Glu	Ala	Leu	Gly	Tyr	Phe	Arg	Asp	Ser	Thr	Val	Ala	Leu	Phe	Asn
145					150				155					160	
Asp	Leu	Lys	Ala	Arg	Gly	Leu	Ala	Leu	Gly	Leu	Pro	Val	Thr	Met	Leu
				165					170					175	
Ile	Asp	Ser	Glu	Gly	Cys	Leu	Ile	Ala	His	Met	Asn	Gly	Pro	Ala	Glu
			180					185					190		
Trp	Ser	Gly	Arg	Asp	Ala	Arg	Arg	Leu	Val	Glu	Thr	Ala	Leu	Gly	Ser
		195					200					205			

<210> 183  
 <211> 176  
 <212> PRT  
 <213> Rhodobacter capsulatus

<400> 183

Met	Ala	Lys	Pro	Leu	Met	Phe	Leu	Pro	Leu	Leu	Val	Met	Ala	Gly	Phe
1				5					10					15	
Val	Gly	Ala	Gly	Tyr	Phe	Ala	Met	Gln	Gln	Asn	Asp	Pro	Asn	Ala	Met
			20					25					30		
Pro	Thr	Ala	Leu	Ala	Gly	Lys	Glu	Ala	Pro	Ala	Val	Arg	Leu	Glu	Pro
		35					40					45			
Leu	Gly	Ala	Glu	Ala	Pro	Phe	Thr	Asp	Ala	Asp	Leu	Arg	Asp	Gly	Lys
		50				55					60				
Ile	Lys	Leu	Val	Asn	Phe	Trp	Ala	Ser	Trp	Cys	Ala	Pro	Cys	Arg	Val
65				70					75					80	
Glu	His	Pro	Asn	Leu	Ile	Gly	Leu	Lys	Gln	Asp	Gly	Ile	Glu	Ile	Met
			85						90					95	
Gly	Val	Asn	Trp	Lys	Asp	Thr	Pro	Asp	Gln	Ala	Gln	Gly	Phe	Leu	Ala
		100						105					110		
Glu	Met	Gly	Ser	Pro	Tyr	Thr	Arg	Leu	Gly	Ala	Asp	Pro	Gly	Asn	Lys
		115					120					125			
Met	Gly	Leu	Asp	Trp	Gly	Val	Ala	Gly	Val	Pro	Glu	Thr	Phe	Val	Val
		130				135					140				
Asp	Gly	Ala	Gly	Arg	Ile	Leu	Thr	Arg	Ile	Ala	Gly	Pro	Leu	Thr	Glu
145					150				155					160	
Asp	Val	Ile	Thr	Lys	Lys	Ile	Asp	Pro	Leu	Leu	Ala	Gly	Thr	Ala	Asp
				165					170					175	

<210> 184  
 <211> 105  
 <212> PRT  
 <213> Synechocystis

<400> 184

Met	Ala	Val	Lys	Lys	Gln	Phe	Ala	Asn	Phe	Ala	Glu	Met	Leu	Ala	Gly
1				5					10					15	
Ser	Pro	Lys	Pro	Val	Leu	Val	Asp	Phe	Tyr	Ala	Thr	Trp	Cys	Gly	Pro
			20					25					30		
Cys	Gln	Met	Met	Ala	Pro	Ile	Leu	Glu	Gln	Val	Gly	Ser	His	Leu	Arg
		35					40					45			
Gln	Gln	Ile	Gln	Val	Val	Lys	Ile	Asp	Thr	Asp	Lys	Tyr	Pro	Ala	Ile
		50				55					60				
Ala	Thr	Gln	Tyr	Gln	Ile	Gln	Ser	Leu	Pro	Thr	Leu	Val	Leu	Phe	Lys
65					70					75					80
Gln	Gly	Gln	Pro	Val	His	Arg	Met	Glu	Gly	Val	Gln	Gln	Ala	Ala	Gln
				85					90					95	
Leu	Ile	Gln	Gln	Leu	Gln	Val	Phe	Val							
			100					105							

<210> 185

<211> 109

<212> PRT

<213> Synechocystis

<400> 185

Met	Ser	Leu	Leu	Glu	Ile	Thr	Asp	Ala	Glu	Phe	Glu	Gln	Glu	Thr	Gln
1				5					10					15	
Gly	Gln	Thr	Lys	Pro	Val	Leu	Val	Tyr	Phe	Trp	Ala	Ser	Trp	Cys	Gly
			20					25					30		
Pro	Cys	Arg	Leu	Met	Ala	Pro	Ala	Ile	Gln	Ala	Ile	Ala	Lys	Asp	Tyr
		35					40					45			
Gly	Asp	Lys	Leu	Lys	Val	Leu	Lys	Leu	Glu	Val	Asp	Pro	Asn	Pro	Ala
	50					55					60				
Ala	Val	Ala	Gln	Cys	Lys	Val	Glu	Gly	Val	Pro	Ala	Leu	Arg	Leu	Phe
65					70					75					80
Lys	Asn	Asn	Glu	Leu	Val	Met	Thr	His	Glu	Gly	Ala	Ile	Ala	Lys	Pro
				85					90					95	
Lys	Leu	Leu	Glu	Leu	Leu	Lys	Glu	Glu	Leu	Asp	Phe	Ile			
			100					105							

<210> 186

<211> 290

<212> PRT

<213> Schizosaccharomyces pombe

<400> 186

Met	Ser	Val	Ile	Glu	Ile	Arg	Ser	Tyr	Gln	His	Trp	Ile	Ser	Thr	Ile
1				5					10					15	
Pro	Lys	Ser	Gly	Tyr	Leu	Ala	Val	Asp	Cys	Tyr	Ala	Asp	Trp	Cys	Gly
			20					25					30		
Pro	Cys	Lys	Ala	Ile	Ser	Pro	Leu	Phe	Ser	Gln	Leu	Ala	Ser	Lys	Tyr
		35					40					45			
Ala	Ser	Pro	Lys	Phe	Val	Phe	Ala	Lys	Val	Asn	Val	Asp	Glu	Gln	Arg
	50					55					60				
Gln	Ile	Ala	Ser	Gly	Leu	Gly	Val	Lys	Ala	Met	Pro	Thr	Phe	Val	Phe
65					70					75					80
Phe	Glu	Asn	Gly	Lys	Gln	Ile	Asp	Met	Leu	Thr	Gly	Ala	Asn	Pro	Gln
				85					90					95	
Ala	Leu	Lys	Glu	Lys	Val	Ala	Leu	Ile	Ser	Ser	Lys	Ala	Thr	Gly	Thr
			100					105					110		
Gly	Ala	Leu	Ala	Ser	Ser	Ser	Ser	Ala	Pro	Val	Lys	Gly	Phe	Ala	Ser
		115					120					125			
Leu	Gln	Gly	Cys	Ile	Glu	Asn	Pro	Gln	Leu	Glu	Cys	Leu	Asn	Gln	Gln
		130				135					140				
Asp	Asp	His	Asp	Leu	Lys	Ser	Ala	Phe	Asn	Ser	Asn	Pro	Ser	Ser	Phe
145					150					155					160
Leu	Glu	Ser	Asp	Val	Asp	Glu	Gln	Leu	Met	Ile	Tyr	Ile	Pro	Phe	Leu
				165					170						175

Glu	Val	Val	Lys	Val	His	Ser	Ile	Ala	Ile	Thr	Pro	Val	Lys	Gly	Glu
			180					185					190		
Thr	Ser	Ser	Ala	Pro	Lys	Thr	Ile	Lys	Leu	Tyr	Ile	Asn	Gln	Pro	Asn
		195					200					205			
Asn	Leu	Ser	Phe	Glu	Asp	Ala	Glu	Ser	Phe	Thr	Pro	Thr	Gln	Val	Ile
	210					215				220					
Glu	Asp	Ile	Val	Tyr	Glu	Gln	Asp	Asp	Gln	Pro	Thr	Ile	Ile	Pro	Leu
225					230					235				240	
Arg	Phe	Val	Lys	Phe	Gln	Arg	Val	Asn	Ser	Leu	Val	Ile	Phe	Ile	Tyr
			245						250					255	
Ser	Asn	Val	Gly	Glu	Glu	Glu	Thr	Thr	Lys	Ile	Ser	Arg	Leu	Glu	Leu
		260					265						270		
Phe	Gly	Glu	Pro	Val	Gly	Asp	Ser	Ser	Lys	Gly	Lys	Leu	Gln	Lys	Val
		275					280					285			
Glu	Ala														
	290														

<210> 187  
 <211> 185  
 <212> PRT  
 <213> Treponema pallidum

Met	Phe	Arg	Ser	Asp	Leu	Val	Leu	Ala	Val	Trp	Gly	Val	Thr	Cys	Val
1				5					10					15	
Gln	Ala	Ala	Asp	Val	Ala	His	Asn	Ala	Asp	Val	Pro	Ser	Arg	Ser	Leu
			20					25					30		
Lys	Ala	Leu	Glu	Arg	Phe	Arg	Phe	Phe	Val	Tyr	Pro	Lys	Pro	Leu	Asp
	35						40					45			
Leu	Ser	Ser	Asp	Phe	His	Ala	Lys	Ala	Leu	Lys	Gly	Glu	Ala	Leu	Val
	50					55					60				
Pro	Ser	Leu	Phe	Lys	Gly	Lys	Val	Thr	Leu	Leu	Asn	Phe	Trp	Ala	Thr
65					70					75					80
Trp	Cys	Pro	Pro	Cys	Arg	Ala	Glu	Met	Pro	Ser	Met	Asp	Arg	Met	Gln
				85				90					95		
Ala	Leu	Met	Arg	Gly	Asn	Asp	Phe	Gln	Ile	Val	Ala	Val	Asn	Val	Gly
			100					105					110		
Asp	Ser	Arg	Lys	Gln	Val	Glu	Ser	Phe	Ile	Ala	Arg	Gly	Lys	His	Thr
	115						120					125			
Phe	Pro	Ile	Tyr	Leu	Asp	Glu	Glu	Gly	Ser	Leu	Gly	Ser	Val	Phe	Ala
	130					135					140				
Ser	Arg	Gly	Leu	Pro	Thr	Thr	Tyr	Val	Val	Asp	Lys	Ala	Gly	Arg	Ile
	145					150				155					160
Val	Ala	Val	Val	Val	Gly	Ser	Val	Glu	Tyr	Asp	Gln	Pro	Glu	Leu	Val
				165					170					175	
Ala	Leu	Phe	Lys	Glu	Leu	Ala	Arg	Asp							
			180					185							

<210> 188  
 <211> 246  
 <212> PRT  
 <213> Caenorhabditis elegans

Met	Leu	Leu	Arg	Leu	Leu	Ala	Val	Leu	Gly	Leu	Phe	Ala	Val	Gly	Val
1				5					10					15	
Ser	Gly	Gly	Pro	Thr	Arg	Ser	Ser	Lys	Leu	Val	Phe	Leu	Asn	Glu	Glu
			20					25					30		
Asn	Trp	Thr	Asp	Leu	Met	Lys	Gly	Glu	Trp	Met	Ile	Glu	Phe	His	Ala
	35						40					45			
Pro	Trp	Cys	Pro	Ala	Cys	Lys	Asp	Leu	Gln	Lys	Ala	Trp	Asn	Ala	Phe
	50					55					60				
Ala	Asp	Trp	Ser	Asp	Asp	Leu	Gly	Ile	Lys	Val	Gly	Glu	Val	Asp	Val
65					70					75					80
Thr	Val	Asn	Pro	Gly	Leu	Ser	Gly	Arg	Phe	Leu	Val	Thr	Ala	Leu	Pro

Thr	Ile	Tyr	His	Val	Lys	Asp	Gly	Val	Phe	Arg	Gln	Tyr	Ser	Gly	Ala
			100					105					110		
Arg	Asp	Lys	Asn	Asp	Phe	Ile	Ser	Phe	Val	Glu	Asp	Lys	Lys	Tyr	Arg
		115					120					125			
Val	Ile	Asp	Pro	Val	Pro	Asp	Tyr	Lys	His	Pro	Asn	Ser	Lys	Gln	Met
		130				135					140				
Ala	Val	Val	Ala	Val	Phe	Phe	Lys	Leu	Ser	Met	Ser	Val	Arg	Asp	Leu
145					150					155					160
His	Asn	His	Leu	Val	Glu	Asp	Lys	Gly	Ile	Pro	Ser	Trp	Ala	Ser	Tyr
			165						170					175	
Gly	Leu	Phe	Ala	Gly	Val	Thr	Leu	Ala	Leu	Gly	Cys	Val	Leu	Gly	Phe
			180					185					190		
Phe	Ile	Val	Ile	Ile	Ile	Asp	Gln	Val	Phe	Pro	Thr	Gly	Pro	Arg	Lys
		195				200						205			
Ser	Gln	Gln	Ala	Lys	Lys	Thr	Glu	Lys	Lys	Asp	Ala	Lys	Lys	Asp	Ser
		210				215					220				
Gly	Thr	Glu	Ser	Pro	Thr	Lys	Lys	Asn	Gly	Asn	Asn	Asn	Asn	Gly	Lys
225					230				235						240
Glu	Thr	Lys	Lys	Thr	Lys										
				245											

<210> 189

<211> 284

<212> PRT

<213> Caenorhabditis elegans

<400> 189

Met	Pro	Val	Ile	Asn	Val	Lys	Asp	Asp	Glu	Asp	Phe	Arg	Asn	Gln	Leu
1				5					10					15	
Ser	Leu	Ala	Gly	Leu	Lys	Ser	Val	Ile	Val	Asp	Phe	Thr	Ala	Val	Trp
			20					25					30		
Cys	Gly	Pro	Cys	Lys	Met	Ile	Ala	Pro	Thr	Phe	Glu	Ala	Leu	Ser	Asn
		35				40					45				
Gln	Tyr	Leu	Gly	Ala	Val	Phe	Leu	Lys	Val	Asp	Val	Glu	Ile	Cys	Glu
	50					55				60					
Lys	Thr	Ser	Ser	Glu	Asn	Gly	Val	Asn	Ser	Met	Pro	Thr	Phe	Met	Val
65				70					75					80	
Phe	Gln	Ser	Gly	Val	Arg	Val	Glu	Gln	Met	Lys	Gly	Ala	Asp	Ala	Lys
				85					90				95		
Ala	Leu	Glu	Thr	Met	Val	Lys	Lys	Tyr	Ala	Asp	Asn	Ser	Ala	Ala	Asp
			100					105					110		
Ser	Leu	Val	Ala	Gly	Gln	Met	Asp	Leu	Thr	Pro	Leu	Val	Asp	Lys	Lys
		115					120					125			
Gln	Met	Glu	Cys	Leu	Asn	Glu	Ser	Asp	Asp	Thr	Pro	Leu	Gly	Arg	Phe
	130					135					140				
Leu	Glu	Gly	Asn	Cys	Asn	Leu	Val	Ser	Asp	Cys	Asp	Glu	Gln	Leu	Ile
145				150					155					160	
Ile	Ser	Leu	Pro	Phe	Asn	Gln	Pro	Val	Lys	Val	His	Ser	Ile	Leu	Ile
			165					170					175		
Lys	Gly	Val	Ser	Asp	Arg	Ala	Pro	Lys	Lys	Val	Lys	Val	Phe	Ile	Asn
		180					185					190			
Leu	Pro	Lys	Thr	Thr	Asp	Phe	Asp	Asn	Ala	Thr	Ala	Leu	Glu	Pro	Thr
		195				200					205				
Gln	Met	Leu	Glu	Phe	Asp	Glu	Ser	Ser	Ile	Gln	Gly	His	Gly	Gln	Val
	210					215					220				
Val	Ala	Leu	Lys	Tyr	Val	Lys	Phe	Gln	Asn	Val	Gln	Asn	Ile	Gln	Phe
225				230					235						240
Phe	Ile	Glu	Asn	Asn	Val	Gly	Gly	Gly	Asp	Val	Thr	Glu	Leu	Val	Lys
			245					250					255		
Leu	Thr	Val	Phe	Gly	Thr	Pro	Leu	Ser	Ala	Leu	Asn	Met	Asn	Glu	Phe
		260					265					270			
Lys	Arg	Val	Ala	Gly	Lys	Ala	Gly	Asp	Ala	Ala	His				
		275					280								

<210> 190  
 <211> 287  
 <212> PRT  
 <213> *Drosophila melanogaster*

<400> 190  
 Met Ser Val Arg Val Ile Asn Asp Glu Ser His Phe Gln Ala Glu Leu  
 1 5 10 15  
 Ala Gln Ala Gly Ile Gln Leu Val Val Asp Phe Thr Ala Ser Trp  
 20 25 30  
 Cys Gly Pro Cys Lys Arg Ile Ala Pro Ile Phe Glu Thr Phe Pro Thr  
 35 40 45  
 Lys Tyr Pro Lys Ala Ile Phe Leu Lys Val Asp Val Asp Lys Cys Gln  
 50 55 60  
 Asp Thr Ala Ala Gly Gln Gly Val Ser Ala Met Pro Thr Phe Ile Phe  
 65 70 75 80  
 Tyr Arg Asn Arg Thr Lys Ile Asp Arg Val Gln Gly Ala Asp Val Asn  
 85 90 95  
 Gly Leu Glu Ala Lys Ile Gln Glu His Ile Gly Thr Ser Gly Gly Glu  
 100 105 110  
 Glu Gly Gly Glu Asp Tyr Gly Gln Gly Leu Met Glu Leu Asn Thr Phe  
 115 120 125  
 Ile Ser Lys Gln Glu Cys Glu Cys Leu Asn Glu Ala Asp Asp His Asn  
 130 135 140  
 Leu Lys His Ala Leu Ala Ser Ala Gly Gly Tyr Leu Gln Ser Asp Cys  
 145 150 155 160  
 Asp Glu Gln Leu Ile Leu Ser Ile Thr Phe Asn Gln Ala Val Lys Ile  
 165 170 175  
 His Ser Leu Lys Phe Lys Ala Pro Ser His Leu Gly Pro Lys Asp Val  
 180 185 190  
 Lys Leu Phe Ile Asn Gln Pro Arg Thr Ile Asp Phe Asp Met Ala Glu  
 195 200 205  
 Ser Met Asn Ser Val Gln Asp Leu Ser Leu Ala Gln Lys Glu Leu Glu  
 210 215 220  
 Ser Gly Val Pro Val Asn Leu Arg Tyr Val Lys Phe Gln Asn Val Gln  
 225 230 235 240  
 Asn Ile Gln Ile Phe Val Lys Asn Asn Gln Ser Gly Gly Asp Val Thr  
 245 250 255  
 Gln Ile Asp Tyr Ile Gly Phe Ile Gly Ser Pro Ile Met Thr Thr Lys  
 260 265 270  
 Met Asn Asp Phe Lys Arg Val Ala Gly Lys Lys Gly Glu Ser His  
 275 280 285

<210> 191  
 <211> 289  
 <212> PRT  
 <213> *Homo sapien*

<400> 191  
 Met Val Gly Val Lys Pro Val Gly Ser Asp Pro Asp Phe Gln Pro Glu  
 1 5 10 15  
 Leu Ser Gly Ala Gly Ser Arg Leu Ala Val Val Lys Phe Thr Met Arg  
 20 25 30  
 Gly Cys Gly Pro Cys Leu Arg Ile Ala Pro Ala Phe Ser Ser Met Ser  
 35 40 45  
 Asn Lys Tyr Pro Gln Ala Val Phe Leu Glu Val Asp Val His Gln Cys  
 50 55 60  
 Gln Gly Thr Ala Ala Thr Asn Ile Ser Ala Thr Pro Thr Phe Leu  
 65 70 75 80  
 Phe Phe Arg Asn Lys Val Arg Ile Asp Gln Tyr Gln Gly Ala Asp Ala  
 85 90 95  
 Val Gly Leu Glu Lys Ile Lys Gln His Leu Glu Asn Asp Pro Gly  
 100 105 110  
 Ser Asn Glu Asp Thr Asp Ile Pro Lys Gly Tyr Met Asp Leu Met Pro  
 115 120 125  
 Phe Ile Asn Lys Ala Gly Cys Glu Cys Leu Asn Glu Ser Asp Glu His



Leu Tyr Val Lys Gly Glu Leu Val Gly Gly Leu Asp Ile Val Lys Glu  
 305 310 315 320  
 Leu Lys Glu Asn Gly Glu Leu Leu Pro Ile Leu Arg Gly Glu Asn  
 325 330 335

<210> 193  
 <211> 131  
 <212> PRT  
 <213> Phalaris coerulescens

<400> 193  
 Met Gly Gly Cys Val Gly Lys Asp Arg Gly Ile Val Glu Asp Lys Leu  
 1 5 10 15  
 Asp Phe Lys Gly Gly Asn Val His Val Ile Thr Thr Lys Glu Asp Trp  
 20 25 30  
 Asp Gln Lys Ile Ala Glu Ala Asn Lys Asp Gly Lys Ile Val Val Ala  
 35 40 45  
 Asn Phe Ser Ala Ser Trp Cys Gly Pro Cys Arg Val Ile Ala Pro Val  
 50 55 60  
 Tyr Ala Glu Met Ser Lys Thr Tyr Pro Gln Leu Met Phe Leu Thr Ile  
 65 70 75 80  
 Asp Val Asp Asp Leu Val Asp Phe Ser Ser Thr Trp Asp Ile Arg Ala  
 85 90 95  
 Thr Pro Thr Phe Phe Phe Leu Lys Asn Gly Gln Gln Ile Asp Lys Leu  
 100 105 110  
 Val Gly Ala Asn Lys Pro Glu Leu Glu Lys Lys Val Gln Ala Leu Gly  
 115 120 125  
 Asp Gly Ser  
 130

<210> 194  
 <211> 144  
 <212> PRT  
 <213> Trypanosoma brucei brucei

<400> 194  
 Met Ser Gly Leu Ala Lys Tyr Leu Pro Gly Ala Thr Asn Leu Leu Ser  
 1 5 10 15  
 Lys Ser Gly Glu Val Ser Leu Gly Ser Leu Val Gly Lys Thr Val Phe  
 20 25 30  
 Leu Tyr Phe Ser Ala Ser Trp Cys Pro Pro Cys Arg Gly Phe Thr Pro  
 35 40 45  
 Val Leu Ala Glu Phe Tyr Glu Lys His His Val Ala Lys Asn Phe Glu  
 50 55 60  
 Val Val Leu Ile Ser Trp Asp Glu Asn Glu Ser Asp Phe His Asp Tyr  
 65 70 75 80  
 Tyr Gly Lys Met Pro Trp Leu Ala Leu Pro Phe Asp Gln Arg Ser Thr  
 85 90 95  
 Val Ser Glu Leu Gly Lys Thr Phe Gly Val Glu Ser Ile Pro Thr Leu  
 100 105 110  
 Ile Thr Ile Asn Ala Asp Thr Gly Ala Ile Ile Gly Thr Gln Ala Arg  
 115 120 125  
 Thr Arg Val Ile Glu Asp Pro Asp Gly Ala Asn Phe Pro Trp Pro Asn  
 130 135 140

<210> 195  
 <211> 333  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 195  
 Met Asn Gly Leu Glu Thr His Asn Thr Arg Leu Cys Ile Val Gly Ser  
 1 5 10 15  
 Gly Pro Ala Ala His Thr Ala Ala Ile Tyr Ala Ala Arg Ala Glu Leu

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<210> 196
<211> 383
<212> PRT
<213> Arabidopsis thaliana
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Val	Leu	Ala	Asp	Ser	Val	Ile	Ile	Ser	Thr	Gly	Ala	Val	Ala	Lys	Arg
				165					170					175	
Leu	Ser	Phe	Thr	Gly	Ser	Gly	Glu	Gly	Asn	Gly	Gly	Phe	Trp	Asn	Arg
			180					185					190		
Gly	Ile	Ser	Ala	Cys	Ala	Val	Cys	Asp	Gly	Ala	Ala	Pro	Ile	Phe	Arg
		195					200					205			
Asn	Lys	Pro	Leu	Val	Val	Ile	Gly	Gly	Gly	Asp	Ser	Ala	Met	Glu	Glu
	210					215					220				
Ala	Asn	Phe	Leu	Thr	Lys	Tyr	Gly	Ser	Lys	Val	Tyr	Ile	Ile	His	Arg
225					230					235				240	
Arg	Asp	Thr	Phe	Arg	Ala	Ser	Lys	Ile	Met	Gln	Gln	Arg	Ala	Leu	Ser
			245						250					255	
Asn	Pro	Lys	Ile	Glu	Val	Ile	Trp	Asn	Ser	Ala	Val	Val	Glu	Ala	Tyr
		260						265					270		
Gly	Asp	Glu	Asn	Gly	Arg	Val	Leu	Gly	Gly	Leu	Lys	Val	Lys	Asn	Val
		275					280					285			
Val	Thr	Gly	Asp	Val	Ser	Asp	Leu	Lys	Val	Ser	Gly	Leu	Phe	Phe	Ala
	290					295					300				
Ile	Gly	His	Glu	Pro	Ala	Thr	Lys	Phe	Leu	Asp	Gly	Gln	Leu	Glu	Leu
305					310					315					320
Asp	Glu	Asp	Gly	Tyr	Val	Val	Thr	Lys	Pro	Gly	Thr	Thr	Lys	Thr	Ser
			325						330					335	
Val	Val	Gly	Val	Phe	Ala	Ala	Gly	Asp	Val	Gln	Asp	Lys	Lys	Tyr	Arg
		340					345						350		
Gln	Ala	Ile	Thr	Ala	Ala	Gly	Thr	Gly	Cys	Met	Ala	Ala	Leu	Asp	Ala
	355						360					365			
Glu	His	Tyr	Leu	Gln	Glu	Ile	Gly	Ser	Gln	Glu	Gly	Lys	Ser	Asp	
	370					375					380				

<210> 197

<211> 323

<212> PRT

<213> Aquifex aeolicus

<400> 197

Met	Ala	Val	Ser	Leu	Met	Gln	Gln	Pro	Asp	Lys	Val	Tyr	Asp	Val	Ile
1				5					10					15	
Ile	Ile	Gly	Ala	Gly	Pro	Ala	Gly	Thr	Thr	Ala	Ala	Ile	Tyr	Thr	Ala
			20					25					30		
Arg	Ala	Gly	Trp	Lys	Thr	Leu	Val	Leu	Tyr	Arg	Ala	Glu	Ala	Asp	Gly
		35					40					45			
Ala	Leu	Gly	Val	Thr	Gln	Lys	Ile	Glu	Asn	Tyr	Pro	Gly	Val	Pro	Gly
	50					55					60				
Pro	Leu	Ser	Gly	Tyr	Glu	Leu	Leu	Lys	Ile	Met	Arg	Glu	Gln	Ala	Lys
65					70					75					80
Ser	Phe	Gly	Ala	Glu	Phe	Val	Arg	Gly	Lys	Val	Ile	Ala	Thr	Asp	Leu
				85					90					95	
Asn	Ser	Asp	Pro	Lys	Lys	Val	Tyr	Thr	Ile	Asp	Gly	Arg	Glu	Phe	Arg
			100					105					110		
Gly	Lys	Thr	Ile	Ile	Val	Ala	Ser	Gly	Ala	Met	Glu	Arg	Ala	Asn	Lys
		115					120					125			
Phe	Lys	Gly	Glu	Glu	Glu	Phe	Leu	Gly	Arg	Gly	Val	Ser	Tyr	Cys	Gly
	130					135					140				
Val	Cys	Asp	Ala	Ala	Phe	Phe	Lys	Asp	Gln	Pro	Val	Ala	Val	Ile	Gly
145					150					155					160
Asp	Asp	Asp	Tyr	Ala	Ile	Glu	Glu	Ala	Glu	Phe	Ile	Ala	Arg	Phe	Ala
				165					170					175	
Asn	Lys	Val	Phe	Phe	Val	Val	Pro	Gly	Ser	Lys	Ile	Lys	Ala	Pro	Pro
		180						185					190		
Glu	Val	Ile	Glu	His	Phe	Glu	Lys	Leu	Pro	Asn	Val	Glu	Ile	Leu	Leu
	195						200					205			
Arg	His	Arg	Pro	Ile	Glu	Ile	Val	Gly	Asp	Gln	Val	Val	Lys	Gly	Ile
	210					215					220				
Lys	Leu	Lys	Asp	Leu	Glu	Lys	Lys	Glu	Glu	Lys	Leu	Leu	Glu	Val	Asn
225					230					235					240
Gly	Val	Phe	Ile	Phe	Leu	Gly	Gly	Thr	Lys	Pro	Ser	Val	Asp	Phe	Leu

Met	Gly	Gln	Val	245	Glu	Met	Thr	Glu	Gly	250	Asp	Cys	Ile	Val	Val	255	Asn	Glu
			260						265							270		
Glu	Met	Met	Thr	Ser	Val	Pro	Gly	Val	Phe	Ala	Ala	Gly	Asp	Val	Leu			
		275					280							285				
Cys	Asn	Glu	Val	Lys	Gln	Ala	Val	Val	Ala	Ala	Ala	Met	Gly	Cys	Lys			
	290					295						300						
Ala	Ala	Leu	Ala	Val	Asp	Lys	Phe	Leu	Ser	Gly	Lys	Lys	Lys	Ile	Val			
305					310					315					320			
Pro	Gln	Trp																

<210> 198  
 <211> 315  
 <212> PRT  
 <213> Bacillus subtilis

<400> 198																		
Ser	Glu	Glu	Lys	Ile	Tyr	Asp	Val	Ile	Ile	Ile	Gly	Ala	Gly	Pro	Ala			
1			5					10						15				
Gly	Met	Thr	Ala	Val	Tyr	Thr	Ser	Arg	Ala	Asn	Leu	Ser	Thr	Leu				
		20					25					30						
Met	Ile	Glu	Arg	Gly	Ile	Pro	Gly	Gly	Gln	Met	Ala	Asn	Thr	Glu	Asp			
		35					40					45						
Val	Glu	Asn	Tyr	Pro	Gly	Phe	Glu	Ser	Ile	Leu	Gly	Pro	Glu	Leu	Ser			
	50					55					60							
Asn	Lys	Met	Phe	Glu	His	Ala	Lys	Lys	Phe	Gly	Ala	Glu	Tyr	Ala	Tyr			
65					70					75					80			
Gly	Asp	Ile	Lys	Glu	Val	Ile	Asp	Gly	Lys	Glu	Tyr	Lys	Val	Val	Lys			
			85						90					95				
Ala	Gly	Ser	Lys	Glu	Tyr	Lys	Ala	Arg	Ala	Val	Ile	Ile	Ala	Ala	Gly			
			100					105					110					
Ala	Glu	Tyr	Lys	Lys	Ile	Gly	Val	Pro	Gly	Glu	Lys	Glu	Leu	Gly	Gly			
		115					120					125						
Arg	Gly	Val	Ser	Tyr	Cys	Ala	Val	Cys	Asp	Gly	Ala	Phe	Phe	Lys	Gly			
	130					135					140							
Lys	Glu	Leu	Val	Val	Val	Gly	Gly	Gly	Asp	Ser	Ala	Val	Glu	Glu	Gly			
145					150					155					160			
Val	Tyr	Leu	Thr	Arg	Phe	Ala	Ser	Lys	Val	Thr	Ile	Val	His	Arg	Arg			
			165						170					175				
Asp	Lys	Leu	Arg	Ala	Gln	Ser	Ile	Leu	Gln	Ala	Arg	Ala	Phe	Asp	Asn			
		180						185					190					
Glu	Lys	Val	Asp	Phe	Leu	Trp	Asn	Lys	Thr	Val	Lys	Glu	Ile	His	Glu			
		195					200					205						
Glu	Asn	Gly	Lys	Val	Gly	Asn	Val	Thr	Leu	Val	Asp	Thr	Val	Thr	Gly			
	210					215						220						
Glu	Glu	Ser	Glu	Phe	Lys	Thr	Asp	Gly	Val	Phe	Ile	Tyr	Ile	Gly	Met			
225					230					235					240			
Leu	Pro	Leu	Ser	Lys	Pro	Phe	Glu	Asn	Leu	Gly	Ile	Thr	Asn	Glu	Glu			
				245					250					255				
Gly	Tyr	Ile	Glu	Thr	Asn	Asp	Arg	Met	Glu	Thr	Lys	Val	Glu	Gly	Ile			
		260						265					270					
Phe	Ala	Ala	Gly	Asp	Ile	Arg	Glu	Lys	Ser	Leu	Arg	Gln	Ile	Val	Thr			
		275					280					285						
Ala	Thr	Gly	Asp	Gly	Ser	Ile	Ala	Ala	Gln	Ser	Val	Gln	His	Tyr	Val			
	290					295					300							
Glu	Glu	Leu	Gln	Glu	Thr	Leu	Lys	Thr	Leu	Lys								
305					310					315								

<210> 199  
 <211> 326  
 <212> PRT  
 <213> Borrelia burgdorferi

<400> 199

Met Leu Glu Phe Glu Thr Ile Asp Ile Asn Leu Thr Lys Lys Lys Asn  
 1 5 10 15  
 Leu Ser Gln Lys Glu Val Asp Phe Ile Glu Asp Val Ile Ile Val Gly  
 20 25 30  
 Ser Gly Pro Ala Gly Leu Thr Ala Gly Ile Tyr Ser Val Met Ser Asn  
 35 40 45  
 Tyr Lys Ala Ala Ile Leu Glu Gly Pro Glu Pro Gly Gly Gln Leu Thr  
 50 55 60  
 Thr Thr Thr Glu Val Tyr Asn Tyr Pro Gly Phe Lys Asn Gly Ile Ser  
 65 70 75 80  
 Gly Arg Asn Leu Met Leu Asn Met Arg Glu Gln Val Val Asn Leu Gly  
 85 90 95  
 Ala Lys Thr Phe Pro Glu Thr Val Phe Ser Ile Lys Arg Lys Gly Asn  
 100 105 110  
 Ile Phe Tyr Leu Tyr Thr Glu Asn Tyr Ile Tyr Lys Ser Lys Ala Val  
 115 120 125  
 Ile Ile Ala Val Gly Ser Lys Pro Lys Lys Leu Glu Thr Leu Lys Asn  
 130 135 140  
 Ser Gly Leu Phe Trp Asn Lys Gly Ile Ser Val Cys Ala Ile Cys Asp  
 145 150 155 160  
 Gly His Leu Phe Lys Gly Lys Arg Val Ala Val Ile Gly Gly Gly Asn  
 165 170 175  
 Thr Ala Leu Ser Glu Ser Ile Tyr Leu Ser Lys Leu Val Asp Lys Val  
 180 185 190  
 Tyr Leu Ile Val Arg Lys Asn Asn Leu Arg Ala Ile Ala Met Leu Arg  
 195 200 205  
 Asp Ser Val Ala Lys Leu Pro Asn Ile Glu Ile Leu Tyr Asn Ser Glu  
 210 215 220  
 Ala Ile Glu Val Asp Gly Lys Ser Ser Val Ser Ser Val Lys Ile Phe  
 225 230 235 240  
 Asn Lys Lys Asp Asn Val Val Tyr Glu Leu Glu Val Ser Ala Val Phe  
 245 250 255  
 Met Ala Val Gly Tyr Lys Pro Asn Thr Glu Phe Leu Lys Gly Phe Leu  
 260 265 270  
 Asp Leu Asp Glu Glu Gly Phe Ile Val Thr Lys Asp Val Val Lys Thr  
 275 280 285  
 Ser Val Asp Gly Val Phe Ser Cys Gly Asp Val Ser Asn Lys Leu Tyr  
 290 295 300  
 Ala Gln Ala Ile Thr Ala Ala Glu Gly Phe Ile Ala Ser Val Glu  
 305 310 315 320  
 Leu Gly Asn Phe Leu Lys  
 325

<210> 200  
 <211> 319  
 <212> PRT  
 <213> Buchnera aphidicola

<400> 200  
 Met Asp Lys Val Lys His Ser Lys Ile Ile Ile Leu Gly Ser Gly Pro  
 1 5 10 15  
 Ala Gly Tyr Thr Ala Ala Ile Tyr Ala Ala Arg Ala Asn Leu Asp Pro  
 20 25 30  
 Phe Leu Ile Thr Gly Thr Asn Lys Gly Gly Gln Leu Met Asn Thr Asn  
 35 40 45  
 Glu Ile Glu Asn Trp Pro Gly Asp Tyr Asn Lys Ile Ser Gly Ser Glu  
 50 55 60  
 Leu Met Asn Arg Met Tyr Lys His Ala Ile Glu Leu Lys Thr Lys Val  
 65 70 75 80  
 Ile Cys Asp Thr Val Ile Ser Val Asn Phe Lys Lys Asn Pro Phe Phe  
 85 90 95  
 Leu Ile Gly Glu Asn Asn Lys Tyr Thr Ala Asp Ser Val Ile Ile Ala  
 100 105 110  
 Thr Gly Ala Asn Pro Arg Tyr Leu Gly Leu Gln Ser Glu Ser Leu Phe  
 115 120 125  
 Lys Gly Lys Gly Val Ser Thr Cys Ala Val Cys Asp Gly Phe Phe Tyr

130		135		140
Lys Asn Lys Glu Val	Ala Val Val Gly Gly Gly	Asn Thr Ala Ile Glu		
145	150	155		160
Glu Thr Leu Tyr Leu	Ser Asn Phe Val Lys Lys Val His Leu Ile His			
	165	170		175
Arg Gly Ile Asn Phe Arg	Ala Glu Lys Ile Leu Leu Asp Arg Leu Glu			
	180	185		190
Lys Lys Ile Lys Ser Gln	Lys Ile Ile Tyr Leu Asn Ser Ile Val			
	195	200		205
Lys Asn Ile Leu Gly Asn	Ser Ser Gly Val Thr Ala Leu Leu Ile Glu			
	210	215		220
Gln Lys Asn Ser Lys Glu	Lys Thr Glu Ser Lys Ile Gln Val Ser Gly			
225	230	235		240
Leu Phe Val Ala Ile Gly	Tyr Thr Pro Asn Thr Asn Ile Phe Val Asn			
	245	250		255
Lys Leu Lys Met Lys Asp	Gly Tyr Ile Gln Val Thr Arg Gln Glu His			
	260	265		270
Gly Asn Tyr Thr Gln Thr	Ser Ile Pro Gly Ile Phe Ala Ala Gly Asp			
	275	280		285
Val Ile Asp His Val Tyr	Arg Gln Ala Ile Thr Ser Ser Ala Ser Gly			
	290	295		300
Cys Met Ala Ala Leu Asp	Ser Glu Arg Tyr Ile Asn Ser Leu Val			
305	310	315		

<210> 201  
 <211> 319  
 <212> PRT  
 <213> Buchnera aphidicola

<400> 201
Met Glu Leu Lys Asn His Lys Lys Ile Ile Ile Leu Gly Ser Gly Pro
1 5 10 15
Ala Gly Tyr Thr Ala Ala Ile Tyr Ser Ser Arg Ala Asn Leu Asn Pro
20 25 30
Leu Leu Ile Thr Gly Ile Asn Lys Gly Gly Gln Leu Met Asn Thr Asn
35 40 45
Glu Ile Glu Asn Trp Pro Gly Asp Phe Lys Lys Ile Thr Gly Pro Glu
50 55 60
Leu Met Asn Arg Met His Glu His Ser Leu Lys Phe Lys Thr Glu Ile
65 70 75
Val Tyr Asp Asn Ile Ile Ser Val Glu Phe Lys Lys Lys Pro Phe Phe
85 90 95
Leu Leu Gly Glu Tyr Asn Lys Tyr Thr Cys Asp Ala Val Ile Ile Ala
100 105 110
Thr Gly Ala Asn Pro Arg Tyr Leu Gly Leu Ser Ser Glu Asn Lys Phe
115 120 125
Lys Gly Lys Gly Ile Ser Thr Cys Ala Val Cys Asp Gly Phe Phe Tyr
130 135 140
Lys Asn Lys Glu Ile Ala Val Val Gly Gly Gly Asn Thr Ala Ile Glu
145 150 155
Glu Thr Leu Tyr Leu Ser Asn Phe Val Lys Lys Ile Tyr Leu Ile His
165 170 175
Arg Arg Asn Asn Phe Lys Ala Glu Lys Ile Leu Ile Asp Arg Leu Leu
180 185 190
Lys Ile Val Lys Thr Lys Lys Val Ile Leu His Leu Asn Ser Thr Ile
195 200 205
Glu Asp Ile Leu Gly Asn Asn Lys Gly Val Thr His Leu Leu Ile Lys
210 215 220
Asn Lys Asn Leu Lys Glu Lys Lys Lys Leu Lys Ile Ala Val Ser Gly
225 230 235
Leu Phe Val Ala Ile Gly Tyr Ile Pro Asn Thr Asp Ile Phe Thr Asp
245 250 255
Gln Leu Lys Met Lys Asp Gly Tyr Ile Lys Ile Lys Lys Gly Thr His
260 265 270
Gly Asn Tyr Thr Gln Thr Asn Ile Pro Gly Val Phe Ala Ala Gly Asp
275 280 285

Val	Ile	Asp	His	Val	Tyr	Arg	Gln	Ala	Ile	Thr	Ser	Ser	Ala	Ser	Gly
	290					295					300				
Cys	Met	Ala	Ala	Leu	Asp	Ser	Glu	Arg	Tyr	Leu	Asn	Ser	Leu	Ser	
305					310					315					

<210> 202  
 <211> 312  
 <212> PRT  
 <213> Chlamydia muridarum

<400> 202															
Met	Thr	His	Val	Lys	Leu	Ala	Ile	Ile	Gly	Ser	Gly	Pro	Ala	Gly	Tyr
1				5					10					15	
Thr	Ala	Ala	Ile	Tyr	Ala	Ser	Arg	Ala	Leu	Leu	Thr	Pro	Ile	Leu	Phe
			20					25					30		
Glu	Gly	Phe	Phe	Ser	Gly	Ile	Ala	Gly	Gly	Gln	Leu	Met	Thr	Thr	Thr
		35					40					45			
Glu	Val	Glu	Asn	Phe	Pro	Gly	Phe	Pro	Gln	Gly	Val	Leu	Gly	His	Gln
	50					55					60				
Leu	Met	Glu	Asn	Met	Lys	Met	Gln	Ala	Gln	Arg	Phe	Gly	Thr	Gln	Val
65					70					75					80
Ile	Ala	Lys	Asp	Ile	Thr	Ser	Val	Asp	Phe	Ser	Val	Arg	Pro	Phe	Val
			85						90					95	
Leu	Lys	Ser	Gly	Glu	Asp	Thr	Phe	Thr	Cys	Asp	Ala	Cys	Ile	Ile	Ala
			100					105					110		
Thr	Gly	Ala	Ser	Ala	Lys	Arg	Leu	Ser	Ile	Pro	Gly	Ala	Gly	Asp	Asn
			115				120					125			
Glu	Phe	Trp	Gln	Lys	Gly	Val	Thr	Ala	Cys	Ala	Val	Cys	Asp	Gly	Ala
	130					135					140				
Ser	Pro	Ile	Phe	Arg	Asp	Arg	Asp	Leu	Phe	Val	Ile	Gly	Gly	Gly	Asp
145					150					155					160
Ser	Ala	Leu	Glu	Glu	Ala	Met	Phe	Leu	Thr	Arg	Tyr	Gly	Lys	Arg	Val
				165					170					175	
Phe	Val	Val	His	Arg	Arg	Asp	Thr	Leu	Arg	Ala	Ser	Lys	Ala	Met	Val
			180					185					190		
Asn	Lys	Ala	Gln	Ala	Asn	Glu	Lys	Ile	Val	Phe	Leu	Trp	Asn	Ser	Glu
		195					200					205			
Val	Val	Lys	Ile	Leu	Gly	Asp	Ser	Leu	Val	Arg	Ser	Ile	Asp	Ile	Phe
	210					215					220				
Asn	Asn	Val	Glu	Lys	Thr	Thr	Val	Thr	Met	Glu	Ala	Ala	Gly	Val	Phe
225					230					235					240
Phe	Ala	Ile	Gly	His	Gln	Pro	Asn	Thr	Ala	Phe	Leu	Gly	Gly	Gln	Leu
				245					250					255	
Ser	Leu	Asp	Glu	Asn	Gly	Tyr	Ile	Ile	Thr	Glu	Lys	Gly	Ser	Ser	Arg
		260						265					270		
Thr	Ser	Val	Pro	Gly	Val	Phe	Ala	Ala	Gly	Asp	Val	Gln	Asp	Lys	Tyr
		275					280					285			
Tyr	Arg	Gln	Ala	Ile	Thr	Ser	Ala	Gly	Ser	Gly	Cys	Met	Ala	Ala	Leu
	290					295					300				
Asp	Ala	Glu	Arg	Phe	Leu	Glu	Lys								
305					310										

<210> 203  
 <211> 311  
 <212> PRT  
 <213> Chlamydia pneumoniae

<400> 203															
Met	Ile	His	Ser	Arg	Leu	Ile	Ile	Ile	Gly	Ser	Gly	Pro	Ser	Gly	Tyr
1				5					10					15	
Thr	Ala	Ala	Ile	Tyr	Ala	Ser	Arg	Ala	Leu	Leu	His	Pro	Leu	Leu	Phe
			20					25					30		
Glu	Gly	Phe	Phe	Ser	Gly	Ile	Ser	Gly	Gly	Gln	Leu	Met	Thr	Thr	Thr
		35					40					45			
Glu	Val	Glu	Asn	Phe	Pro	Gly	Phe	Pro	Glu	Gly	Ile	Leu	Gly	Pro	Lys

50						55					60				
Leu	Met	Asn	Asn	Met	Lys	Glu	Gln	Ala	Val	Arg	Phe	Gly	Thr	Lys	Thr
65					70					75					80
Leu	Ala	Gln	Asp	Ile	Ile	Ser	Val	Asp	Phe	Ser	Val	Arg	Pro	Phe	Ile
				85					90					95	
Leu	Lys	Ser	Lys	Glu	Glu	Thr	Tyr	Ser	Cys	Asp	Ala	Cys	Ile	Ile	Ala
			100					105					110		
Thr	Gly	Ala	Ser	Ala	Lys	Arg	Leu	Glu	Ile	Pro	Gly	Ala	Gly	Asn	Asp
		115					120					125			
Glu	Phe	Trp	Gln	Lys	Gly	Val	Thr	Ala	Cys	Ala	Val	Cys	Asp	Gly	Ala
	130					135					140				
Ser	Pro	Ile	Phe	Lys	Asn	Lys	Asp	Leu	Tyr	Val	Ile	Gly	Gly	Gly	Asp
145					150					155					160
Ser	Ala	Leu	Glu	Glu	Ala	Leu	Tyr	Leu	Thr	Arg	Tyr	Gly	Ser	His	Val
				165					170					175	
Tyr	Val	Val	His	Arg	Arg	Asp	Lys	Leu	Arg	Ala	Ser	Lys	Ala	Met	Glu
			180					185					190		
Ala	Arg	Ala	Gln	Asn	Asn	Glu	Lys	Ile	Thr	Phe	Leu	Trp	Asn	Ser	Glu
		195					200					205			
Ile	Val	Lys	Ile	Ser	Gly	Asp	Ser	Ile	Val	Arg	Ser	Val	Asp	Ile	Lys
	210					215					220				
Asn	Val	Gln	Thr	Gln	Glu	Ile	Thr	Thr	Arg	Glu	Ala	Ala	Gly	Val	Phe
225					230					235					240
Phe	Ala	Ile	Gly	His	Lys	Pro	Asn	Thr	Asp	Phe	Leu	Gly	Gly	Gln	Leu
				245					250					255	
Thr	Leu	Asp	Glu	Ser	Gly	Tyr	Ile	Val	Thr	Glu	Lys	Gly	Thr	Ser	Lys
			260					265					270		
Thr	Ser	Val	Pro	Gly	Val	Phe	Ala	Ala	Gly	Asp	Val	Gln	Asp	Lys	Tyr
		275					280					285			
Tyr	Arg	Gln	Ala	Val	Thr	Ser	Ala	Gly	Ser	Gly	Cys	Ile	Ala	Ala	Leu
	290					295					300				
Asp	Ala	Glu	Arg	Phe	Leu	Gly									
305					310										

<210> 204  
 <211> 312  
 <212> PRT  
 <213> Chlamydia trachomatis

<400> 204

Met	Thr	His	Ala	Lys	Leu	Val	Ile	Ile	Gly	Ser	Gly	Pro	Ala	Gly	Tyr
1				5					10					15	
Thr	Ala	Ala	Ile	Tyr	Ala	Ser	Arg	Ala	Leu	Leu	Thr	Pro	Val	Leu	Phe
			20					25					30		
Glu	Gly	Phe	Phe	Ser	Gly	Ile	Ala	Gly	Gly	Gln	Leu	Met	Thr	Thr	Thr
		35					40					45			
Glu	Val	Glu	Asn	Phe	Pro	Gly	Phe	Pro	Glu	Gly	Val	Leu	Gly	His	Gln
	50					55					60				
Leu	Met	Asp	Leu	Met	Lys	Thr	Gln	Ala	Gln	Arg	Phe	Gly	Thr	Gln	Val
65					70					75				80	
Leu	Ser	Lys	Asp	Ile	Thr	Ala	Val	Asp	Phe	Ser	Val	Arg	Pro	Phe	Val
				85					90					95	
Leu	Lys	Ser	Gly	Lys	Glu	Thr	Phe	Thr	Cys	Asp	Ala	Cys	Ile	Ile	Ala
			100					105					110		
Thr	Gly	Ala	Ser	Ala	Lys	Arg	Leu	Ser	Ile	Pro	Gly	Ala	Gly	Asp	Asn
		115					120					125			
Glu	Phe	Trp	Gln	Lys	Gly	Val	Thr	Ala	Cys	Ala	Val	Cys	Asp	Gly	Ala
	130					135					140				
Ser	Pro	Ile	Phe	Arg	Asp	Lys	Asp	Leu	Phe	Val	Val	Gly	Gly	Gly	Asp
145					150					155					160
Ser	Ala	Leu	Glu	Glu	Ala	Met	Phe	Leu	Thr	Arg	Tyr	Gly	Lys	Arg	Val
				165					170					175	
Phe	Val	Val	His	Arg	Arg	Asp	Thr	Leu	Arg	Ala	Ser	Lys	Val	Met	Val
			180					185					190		
Asn	Lys	Ala	Gln	Ala	Asn	Glu	Lys	Ile	Phe	Phe	Leu	Trp	Asn	Ser	Glu
		195					200					205			

Ile	Val	Lys	Ile	Ser	Gly	Asp	Thr	Leu	Val	Arg	Ser	Ile	Asp	Ile	Tyr
	210					215					220				
Asn	Asn	Val	Asp	Glu	Thr	Thr	Thr	Thr	Met	Glu	Ala	Ala	Gly	Val	Phe
225					230					235					240
Phe	Ala	Ile	Gly	His	Gln	Pro	Asn	Thr	Ala	Phe	Leu	Gly	Gly	Gln	Val
				245					250					255	
Ala	Leu	Asp	Glu	Asn	Gly	Tyr	Ile	Ile	Thr	Glu	Lys	Gly	Ser	Ser	Arg
		260						265					270		
Thr	Ser	Val	Pro	Gly	Val	Phe	Ala	Ala	Gly	Asp	Val	Gln	Asp	Lys	Tyr
		275					280					285			
Tyr	Arg	Gln	Ala	Ile	Thr	Ser	Ala	Gly	Ser	Gly	Cys	Met	Ala	Ala	Leu
	290					295					300				
Asp	Ala	Glu	Arg	Phe	Leu	Glu	Asn								
305					310										

<210> 205  
 <211> 315  
 <212> PRT  
 <213> Clostridium litorale

<400> 205															
Met	Glu	Asn	Val	Tyr	Asp	Ile	Ala	Ile	Ile	Gly	Ser	Gly	Pro	Ala	Gly
1				5				10					15		
Leu	Ala	Ala	Ala	Leu	Tyr	Gly	Ala	Arg	Ala	Lys	Met	Lys	Thr	Leu	Leu
			20					25					30		
Leu	Glu	Gly	Met	Lys	Val	Gly	Gly	Gln	Ile	Val	Ile	Thr	His	Glu	Val
		35				40						45			
Ala	Asn	Tyr	Pro	Gly	Ser	Val	Pro	Glu	Ala	Thr	Gly	Pro	Ser	Leu	Ile
	50				55						60				
Gly	Arg	Met	Glu	Glu	Gln	Val	Glu	Glu	Phe	Gly	Ala	Glu	Arg	Val	Met
65					70				75					80	
Asp	Asn	Ile	Val	Asp	Val	Asp	Phe	Thr	Asp	Lys	Ile	Lys	Val	Leu	Lys
				85					90					95	
Gly	Ala	Lys	Gly	Glu	Tyr	Lys	Ala	Lys	Ala	Val	Ile	Val	Ala	Thr	Gly
			100					105					110		
Ala	Ser	Pro	Lys	Leu	Ala	Gly	Cys	Pro	Gly	Glu	Lys	Glu	Leu	Thr	Gly
		115					120					125			
Lys	Gly	Val	Ser	Tyr	Cys	Ala	Thr	Cys	Asp	Ala	Asp	Phe	Phe	Glu	Asp
	130					135					140				
Met	Glu	Val	Phe	Val	Ile	Gly	Gly	Gly	Asp	Thr	Ala	Val	Glu	Glu	Ala
145					150				155					160	
Met	Phe	Leu	Thr	Lys	Phe	Ala	Arg	Lys	Val	Thr	Ile	Val	His	Arg	Arg
				165					170					175	
Ala	Glu	Leu	Arg	Ala	Ala	Lys	Ser	Ile	Gln	Glu	Lys	Ala	Phe	Lys	Asn
			180					185					190		
Glu	Lys	Leu	Asn	Phe	Met	Trp	Asn	Thr	Val	Ile	Glu	Glu	Ile	Lys	Gly
		195					200					205			
Asp	Gly	Ile	Val	Glu	Ser	Ala	Val	Phe	Lys	Asn	Arg	Glu	Thr	Gly	Glu
	210					215					220				
Val	Thr	Glu	Phe	Val	Ala	Pro	Glu	Glu	Asp	Gly	Thr	Phe	Gly	Ile	Phe
225					230					235				240	
Val	Phe	Ile	Gly	Tyr	Asp	Pro	Lys	Ser	Ala	Leu	Val	Glu	Gly	Lys	Leu
				245					250					255	
Glu	Leu	Asp	Glu	Thr	Gly	Tyr	Ile	Pro	Thr	Asp	Asp	Asn	Met	Lys	Thr
		260						265					270		
Asn	Val	Glu	Gly	Val	Phe	Ala	Ala	Gly	Asp	Ile	Arg	Val	Lys	Ser	Leu
		275					280					285			
Arg	Gln	Val	Val	Thr	Ala	Thr	Ala	Asp	Gly	Ala	Ile	Ala	Ala	Val	Gln
	290					295					300				
Ala	Glu	Lys	Tyr	Ile	Glu	Glu	Leu	Phe	Ala	Glu					
305					310					315					

<210> 206  
 <211> 321  
 <212> PRT

<213> *Coxiella burnetii*

<400> 206

Met	Asn	Lys	Pro	Gln	His	His	Ser	Leu	Ile	Ile	Leu	Gly	Ser	Gly	Pro
1				5					10					15	
Ala	Gly	Tyr	Thr	Asp	Ala	Ile	Tyr	Val	Ala	Arg	Ala	Asn	Leu	Lys	Pro
			20					25					30		
Ile	Met	Ile	Thr	Gly	Met	Glu	Gln	Gly	Gly	Gln	Leu	Met	Thr	Thr	Thr
		35				40						45			
Asp	Val	Ala	Asn	Trp	Pro	Gly	Glu	Ala	Pro	Gly	Leu	Gln	Gly	Pro	Lys
	50					55					60				
Leu	Leu	Glu	Arg	Met	Gln	Lys	His	Ala	Gly	Gly	Ala	Leu	Asn	Thr	Gln
65					70					75					80
Phe	Ile	Phe	Asp	His	Ile	Asn	Lys	Pro	Asp	Leu	Asn	Pro	Arg	Pro	Phe
				85					90					95	
Leu	Leu	Gln	Gly	Asp	Asn	Ala	Thr	Tyr	Ser	Cys	Asp	Ala	Leu	Ile	Ile
			100					105					110		
Ala	Thr	Gly	Ala	Ser	Ala	Arg	Tyr	Leu	Gly	Leu	Pro	Ser	Glu	Lys	Pro
		115					120					125			
Tyr	Met	Gly	Lys	Gly	Val	Ser	Ala	Cys	Ala	Thr	Cys	Asp	Gly	Phe	Phe
	130					135					140				
Tyr	Arg	Ala	Lys	Lys	Val	Ala	Val	Val	Gly	Gly	Gly	Asn	Thr	Ser	Val
145					150					155					160
Glu	Glu	Ala	Leu	Tyr	Leu	Ser	His	Ile	Ala	Ser	His	Val	Thr	Leu	Ile
				165					170					175	
His	Arg	Arg	Asp	Lys	Leu	Arg	Ala	Glu	Lys	Met	Leu	Ser	Ala	Gln	Leu
			180					185					190		
Ile	Lys	Lys	Val	Glu	Glu	Gly	Lys	Val	Ala	Ile	Val	Trp	Ser	His	Val
		195					200					205			
Ile	Glu	Glu	Val	Leu	Gly	Asp	Asp	Gln	Gly	Val	Thr	Gly	Val	His	Leu
	210					215					220				
Lys	His	Val	Lys	Glu	Glu	Lys	Thr	Gln	Asp	Leu	Thr	Ile	Asp	Gly	Leu
225					230					235					240
Phe	Ile	Ala	Ile	Gly	His	Asp	Pro	Asn	Thr	Lys	Ile	Phe	Lys	Glu	Gln
				245				250						255	
Leu	Glu	Met	Asp	Glu	Ala	Gly	Tyr	Leu	Arg	Ala	Lys	Ser	Gly	Leu	Gln
			260					265					270		
Gly	Asn	Ala	Thr	Ala	Thr	Asn	Ile	Pro	Gly	Val	Phe	Pro	Ala	Val	Val
		275					280					285			
Val	Arg	Gly	Gln	Leu	Tyr	Arg	Gln	Thr	Ile	Ala	Ala	Ala	Gly	Met	Gly
	290					295				300					
Cys	Met	Pro	Ala	Leu	Asp	Ala	Glu	Arg	Tyr	Leu	Asp	Ser	Leu	Asn	Gln
305					310					315					320
Ala															

<210> 207

<211> 320

<212> PRT

<213> *Escherichia coli*

<400> 207

Gly	Thr	Thr	Lys	His	Ser	Lys	Leu	Leu	Ile	Leu	Gly	Ser	Gly	Pro	Ala
1				5					10					15	
Gly	Tyr	Thr	Ala	Ala	Val	Tyr	Ala	Ala	Arg	Ala	Asn	Leu	Gln	Pro	Val
			20					25					30		
Leu	Ile	Thr	Gly	Met	Glu	Lys	Gly	Gln	Leu	Thr	Thr	Thr	Thr	Glu	
		35					40					45			
Val	Glu	Asn	Trp	Pro	Gly	Asp	Pro	Asn	Asp	Leu	Thr	Gly	Pro	Leu	Leu
	50					55					60				
Met	Glu	Arg	Met	His	Glu	His	Ala	Thr	Lys	Phe	Glu	Thr	Glu	Ile	Ile
65					70					75				80	
Phe	Asp	His	Ile	Asn	Lys	Val	Asp	Leu	Gln	Asn	Arg	Pro	Phe	Arg	Leu
				85					90					95	
Asn	Gly	Asp	Asn	Gly	Glu	Tyr	Thr	Cys	Asp	Ala	Leu	Ile	Ile	Ala	Thr
			100					105					110		



Gly	Ala	Ser	Ala	Arg	Tyr	Leu	Gly	Leu	Pro	Ser	Glu	Glu	Ala	Phe	Lys
	115						120					125			
Gly	Arg	Gly	Val	Ser	Ala	Cys	Ala	Thr	Cys	Asp	Gly	Phe	Phe	Tyr	Arg
	130					135					140				
Asn	Gln	Lys	Val	Ala	Val	Ile	Gly	Gly	Gly	Asn	Thr	Ala	Val	Glu	Glu
	145				150					155					160
Ala	Leu	Tyr	Leu	Ser	Asn	Ile	Ala	Ser	Glu	Val	His	Leu	Ile	His	Arg
				165					170						175
Arg	Asp	Gly	Phe	Arg	Ala	Glu	Lys	Ile	Leu	Ile	Lys	Arg	Leu	Met	Asp
			180					185					190		
Lys	Val	Glu	Asn	Gly	Asn	Ile	Ile	Leu	His	Thr	Asn	Arg	Thr	Leu	Glu
		195				200						205			
Glu	Val	Thr	Gly	Asp	Gln	Met	Gly	Val	Thr	Gly	Val	Arg	Leu	Arg	Asp
	210					215					220				
Thr	Gln	Asn	Ser	Asp	Asn	Ile	Glu	Ser	Leu	Asp	Val	Ala	Gly	Leu	Phe
	225				230					235					240
Val	Ala	Ile	Gly	His	Ser	Pro	Asn	Thr	Ala	Ile	Phe	Glu	Gly	Gln	Leu
				245					250					255	
Glu	Leu	Glu	Asn	Gly	Tyr	Ile	Lys	Val	Gln	Ser	Gly	Ile	His	Gly	Asn
			260				265						270		
Ala	Thr	Gln	Thr	Ser	Ile	Pro	Gly	Val	Phe	Ala	Ala	Gly	Asp	Val	Met
		275					280					285			
Asp	His	Ile	Tyr	Arg	Gln	Ala	Ile	Thr	Ser	Ala	Gly	Thr	Gly	Cys	Met
	290				295						300				
Ala	Ala	Leu	Asp	Ala	Glu	Arg	Tyr	Leu	Asp	Gly	Leu	Ala	Asp	Ala	Lys
	305				310					315					320

<210> 208

<211> 315

<212> PRT

<213> Eubacterium acidaminophilum

<400> 208

Met	Glu	Asn	Val	Tyr	Asp	Leu	Ala	Ile	Ile	Gly	Ser	Gly	Pro	Ala	Gly
	1			5					10					15	
Leu	Ala	Ala	Ala	Leu	Tyr	Gly	Ala	Arg	Ala	Lys	Met	Lys	Thr	Ile	Met
			20					25					30		
Ile	Glu	Gly	Gln	Lys	Val	Gly	Gly	Gln	Ile	Val	Ile	Thr	His	Glu	Val
		35				40						45			
Ala	Asn	Tyr	Pro	Gly	Ser	Val	Arg	Glu	Ala	Thr	Gly	Pro	Ser	Leu	Ile
	50				55						60				
Glu	Arg	Met	Glu	Glu	Gln	Ala	Asn	Glu	Phe	Gly	Ala	Glu	Lys	Val	Met
	65				70				75						80
Asp	Lys	Ile	Val	Asp	Val	Asp	Leu	Asp	Gly	Lys	Ile	Lys	Val	Ile	Lys
				85					90					95	
Gly	Glu	Lys	Ala	Glu	Tyr	Lys	Ala	Lys	Ser	Val	Ile	Leu	Ala	Thr	Gly
			100					105					110		
Ala	Ala	Pro	Arg	Leu	Ala	Gly	Cys	Pro	Gly	Glu	Gln	Glu	Leu	Thr	Gly
		115					120					125			
Lys	Gly	Val	Ser	Tyr	Cys	Ala	Thr	Cys	Asp	Ala	Asp	Phe	Phe	Glu	Asp
	130					135					140				
Met	Glu	Val	Phe	Val	Val	Gly	Gly	Gly	Asp	Thr	Ala	Val	Glu	Glu	Ala
	145				150					155					160
Met	Tyr	Leu	Ala	Lys	Phe	Ala	Arg	Lys	Val	Thr	Ile	Val	His	Arg	Arg
				165					170					175	
Asp	Glu	Leu	Arg	Ala	Ala	Lys	Ser	Ile	Gln	Glu	Lys	Ala	Phe	Lys	Asn
			180					185					190		
Pro	Lys	Leu	Asp	Phe	Met	Trp	Asn	Ser	Ala	Ile	Glu	Glu	Ile	Lys	Gly
		195					200					205			
Asp	Gly	Ile	Val	Glu	Ser	Ala	Val	Phe	Lys	Asn	Leu	Val	Thr	Gly	Glu
	210					215					220				
Thr	Thr	Glu	Tyr	Phe	Ala	Asn	Glu	Glu	Asp	Gly	Thr	Phe	Gly	Ile	Phe
	225				230					235					240
Val	Phe	Ile	Gly	Tyr	Ile	Pro	Lys	Ser	Asp	Val	Phe	Lys	Gly	Lys	Ile
				245					250					255	
Thr	Leu	Asp	Asp	Ala	Gly	Tyr	Ile	Ile	Thr	Asp	Asp	Asn	Met	Lys	Thr

Asn	Val	Glu	Gly	Val	Phe	Ala	Ala	Gly	Asp	Ile	Arg	Val	Lys	Ser	Leu
		275					280					285			
Arg	Gln	Val	Val	Thr	Ala	Cys	Ala	Asp	Gly	Ala	Ile	Ala	Ala	Thr	Gln
	290					295					300				
Ala	Glu	Lys	Tyr	Val	Glu	Ala	Asn	Phe	Glu	Glu					
305					310					315					

<210> 209  
 <211> 318  
 <212> PRT  
 <213> Haemophilus influenzae

Met	Ser	Asp	Ile	Lys	His	Ala	Lys	Leu	Leu	Ile	Leu	Gly	Ser	Gly	Pro
1				5				10					15		
Ala	Gly	Tyr	Thr	Ala	Ala	Ile	Tyr	Ala	Ala	Arg	Ala	Asn	Leu	Lys	Pro
			20					25				30			
Val	Leu	Val	Thr	Gly	Leu	Gln	Gln	Gly	Gly	Gln	Leu	Thr	Thr	Thr	Asp
		35				40					45				
Glu	Ile	Glu	Asn	Trp	Pro	Gly	Asp	Phe	Glu	Met	Thr	Thr	Gly	Ser	Gly
	50					55					60				
Leu	Met	Gln	Arg	Met	Leu	Gln	His	Ala	Glu	Lys	Phe	Glu	Thr	Glu	Ile
65				70						75					80
Val	Phe	Asp	His	Ile	Asn	Arg	Val	Asp	Leu	Ser	Ser	Arg	Pro	Phe	Lys
			85					90					95		
Leu	Phe	Gly	Asp	Val	Gln	Asn	Phe	Thr	Cys	Asp	Ala	Leu	Ile	Ile	Ala
			100					105					110		
Thr	Gly	Ala	Ser	Ala	Arg	Tyr	Ile	Gly	Leu	Pro	Ser	Glu	Glu	Asn	Tyr
		115					120					125			
Lys	Gly	Arg	Gly	Val	Ser	Ala	Cys	Ala	Thr	Cys	Asp	Gly	Phe	Phe	Tyr
	130					135					140				
Arg	Asn	Lys	Pro	Val	Gly	Val	Ile	Gly	Gly	Gly	Asn	Thr	Ala	Val	Glu
145					150					155					160
Glu	Ala	Leu	Tyr	Leu	Ala	Asn	Ile	Ala	Ser	Thr	Val	His	Leu	Ile	His
				165				170					175		
Arg	Arg	Asp	Ser	Phe	Arg	Ala	Glu	Lys	Ile	Leu	Ile	Asp	Arg	Leu	Tyr
		180						185					190		
Lys	Lys	Val	Glu	Glu	Gly	Lys	Ile	Val	Leu	His	Thr	Asp	Arg	Thr	Leu
		195					200					205			
Asp	Glu	Val	Leu	Gly	Asp	Asn	Met	Gly	Val	Thr	Gly	Leu	Arg	Leu	Ala
	210					215					220				
Asn	Thr	Lys	Thr	Gly	Glu	Lys	Glu	Glu	Leu	Lys	Leu	Asp	Gly	Leu	Phe
225					230					235					240
Val	Ala	Ile	Gly	His	Ser	Pro	Asn	Thr	Glu	Ile	Phe	Gln	Gly	Gln	Leu
				245					250					255	
Glu	Leu	Asn	Asn	Gly	Tyr	Ile	Val	Val	Lys	Ser	Gly	Leu	Asp	Gly	Asn
		260						265					270		
Ala	Thr	Ala	Thr	Ser	Val	Glu	Gly	Val	Phe	Ala	Ala	Gly	Asp	Val	Met
		275					280					285			
Asp	His	Asn	Tyr	Arg	Gln	Ala	Ile	Thr	Ser	Ala	Gly	Thr	Gly	Cys	Met
	290				295						300				
Ala	Ala	Leu	Asp	Ala	Glu	Arg	Tyr	Leu	Asp	Ala	Gln	Glu	Ala		
305					310					315					

<210> 210  
 <211> 311  
 <212> PRT  
 <213> Helicobacter pylori

Met	Ile	Asp	Cys	Ala	Ile	Ile	Gly	Gly	Gly	Pro	Ala	Gly	Leu	Ser	Ala
1				5				10					15		
Gly	Leu	Tyr	Ala	Thr	Arg	Gly	Gly	Val	Lys	Asn	Ala	Val	Leu	Phe	Glu
			20					25					30		

Lys	Gly	Met	Pro	Gly	Gly	Gln	Ile	Thr	Gly	Ser	Ser	Glu	Ile	Glu	Asn
		35					40					45			
Tyr	Pro	Gly	Val	Lys	Glu	Val	Val	Ser	Gly	Leu	Asp	Phe	Met	Gln	Pro
	50					55					60				
Trp	Gln	Glu	Gln	Cys	Phe	Arg	Phe	Gly	Leu	Lys	His	Glu	Met	Thr	Ala
	65				70					75					80
Ile	Gln	Arg	Val	Ser	Lys	Lys	Gly	Ser	His	Phe	Val	Ile	Leu	Ala	Glu
				85					90					95	
Asp	Gly	Lys	Thr	Phe	Glu	Ala	Lys	Ser	Val	Ile	Ile	Ala	Thr	Gly	Gly
			100					105					110		
Ser	Pro	Lys	Arg	Thr	Gly	Ile	Lys	Gly	Glu	Ser	Glu	Tyr	Trp	Gly	Lys
		115					120					125			
Gly	Val	Ser	Thr	Cys	Ala	Thr	Cys	Asp	Gly	Phe	Phe	Tyr	Lys	Asn	Lys
	130					135					140				
Glu	Val	Ala	Val	Leu	Gly	Gly	Gly	Asp	Thr	Ala	Val	Glu	Glu	Ala	Ile
	145				150					155					160
Tyr	Leu	Ala	Asn	Ile	Cys	Lys	Lys	Val	Tyr	Leu	Ile	His	Arg	Arg	Asp
			165						170					175	
Gly	Phe	Arg	Cys	Ala	Pro	Ile	Thr	Leu	Glu	His	Ala	Lys	Asn	Asn	Ser
			180					185					190		
Lys	Ile	Glu	Phe	Leu	Thr	Pro	Tyr	Val	Val	Glu	Glu	Ile	Lys	Gly	Asp
	195					200						205			
Ala	Ser	Gly	Val	Ser	Ser	Leu	Ser	Ile	Lys	Asn	Thr	Ala	Thr	Asn	Glu
	210					215					220				
Lys	Arg	Glu	Leu	Val	Val	Pro	Gly	Leu	Phe	Ile	Phe	Val	Gly	Tyr	Asp
	225				230					235					240
Val	Asn	Asn	Ala	Val	Leu	Lys	Gln	Glu	Asp	Asn	Ser	Met	Leu	Cys	Glu
			245						250					255	
Cys	Asp	Glu	Tyr	Gly	Ser	Ile	Val	Val	Asp	Phe	Ser	Met	Lys	Thr	Asn
		260						265					270		
Val	Gln	Gly	Leu	Phe	Ala	Ala	Gly	Asp	Ile	Arg	Ile	Phe	Ala	Pro	Lys
	275						280					285			
Gln	Val	Val	Cys	Ala	Ala	Ser	Asp	Gly	Ala	Thr	Ala	Ala	Leu	Ser	Val
	290					295					300				
Ile	Ser	Tyr	Leu	Glu	His	His									
	305				310										

<210> 211  
 <211> 311  
 <212> PRT  
 <213> Helicobacter pylori

<400> 211

Met	Ile	Asp	Cys	Ala	Ile	Ile	Gly	Gly	Gly	Pro	Ala	Gly	Leu	Ser	Ala
	1			5					10					15	
Gly	Leu	Tyr	Ala	Thr	Arg	Gly	Gly	Val	Lys	Asn	Ala	Val	Leu	Phe	Glu
			20					25					30		
Lys	Gly	Met	Pro	Gly	Gly	Gln	Ile	Thr	Gly	Ser	Ser	Glu	Ile	Glu	Asn
		35				40						45			
Tyr	Pro	Gly	Val	Lys	Glu	Val	Ser	Gly	Leu	Asp	Phe	Met	Gln	Pro	
	50				55					60					
Trp	Gln	Glu	Gln	Cys	Phe	Arg	Phe	Gly	Leu	Lys	His	Glu	Met	Thr	Ala
	65				70					75					80
Val	Gln	Arg	Val	Ser	Lys	Lys	Asp	Ser	His	Phe	Val	Ile	Leu	Ala	Glu
				85					90					95	
Asp	Gly	Lys	Thr	Phe	Glu	Ala	Lys	Ser	Val	Ile	Ile	Ala	Thr	Gly	Gly
			100					105					110		
Ser	Pro	Lys	Arg	Thr	Gly	Ile	Lys	Gly	Glu	Ser	Glu	Tyr	Trp	Gly	Lys
		115					120					125			
Gly	Val	Ser	Thr	Cys	Ala	Thr	Cys	Asp	Gly	Phe	Phe	Tyr	Lys	Asn	Lys
	130					135					140				
Glu	Val	Ala	Val	Leu	Gly	Gly	Gly	Asp	Thr	Ala	Val	Glu	Glu	Ala	Ile
	145				150					155					160
Tyr	Leu	Ala	Asn	Ile	Cys	Lys	Lys	Val	Tyr	Leu	Ile	His	Arg	Arg	Asp
			165						170					175	
Gly	Phe	Arg	Cys	Ala	Pro	Ile	Thr	Leu	Glu	His	Ala	Lys	Asn	Asn	Asp



<210> 213  
 <211> 315  
 <212> PRT  
 <213> Mycoplasma genitalium

<400> 213  
 Met Leu Lys Val Asn Ala Asp Phe Leu Thr Lys Asp Gln Val Ile Tyr  
 1 5 10 15  
 Asp Leu Val Ile Val Gly Ala Gly Pro Ala Gly Ile Ala Ser Ala Ile  
 20 25 30  
 Tyr Gly Lys Arg Ala Asn Leu Asn Leu Ala Ile Ile Glu Gly Asn Thr  
 35 40 45  
 Pro Gly Gly Lys Ile Val Lys Thr Asn Ile Val Glu Asn Tyr Pro Gly  
 50 55 60  
 Phe Lys Thr Ile Thr Gly Pro Glu Leu Gly Leu Glu Met Tyr Asn His  
 65 70 75 80  
 Leu Leu Ala Phe Glu Pro Val Val Phe Tyr Asn Asn Leu Ile Lys Ile  
 85 90 95  
 Asp His Leu Asn Asp Thr Phe Ile Leu Tyr Leu Asp Asn Lys Thr Thr  
 100 105 110  
 Val Phe Ser Lys Thr Val Ile Tyr Ala Thr Gly Met Glu Glu Arg Lys  
 115 120 125  
 Leu Gly Ile Glu Lys Glu Asp Tyr Phe Tyr Gly Lys Gly Ile Ser Tyr  
 130 135 140  
 Cys Ala Ile Cys Asp Ala Ala Leu Tyr Lys Gly Lys Thr Val Gly Val  
 145 150 155 160  
 Val Gly Gly Gly Asn Ser Ala Ile Gln Glu Ala Ile Tyr Leu Ser Ser  
 165 170 175  
 Ile Ala Lys Thr Val His Leu Ile His Arg Arg Glu Val Phe Arg Ser  
 180 185 190  
 Asp Ala Leu Leu Val Glu Lys Leu Lys Lys Ile Ser Asn Val Val Phe  
 195 200 205  
 His Leu Asn Ala Thr Val Lys Gln Leu Ile Gly Gln Glu Lys Leu Gln  
 210 215 220  
 Thr Val Lys Leu Ala Ser Thr Val Asp Lys Ser Glu Ser Glu Ile Ala  
 225 230 235 240  
 Ile Asp Cys Leu Phe Pro Tyr Ile Gly Phe Glu Ser Asn Asn Lys Pro  
 245 250 255  
 Val Leu Asp Leu Lys Leu Asn Leu Asp Gln Asn Gly Phe Ile Leu Gly  
 260 265 270  
 Asp Glu Asn Met Gln Thr Asn Ile Lys Gly Phe Tyr Val Ala Gly Asp  
 275 280 285  
 Cys Arg Ser Lys Ser Phe Arg Gln Ile Ala Thr Ala Ile Ser Asp Gly  
 290 295 300  
 Val Thr Ala Val Leu Lys Val Arg Asp Asp Ile  
 305 310 315

<210> 214  
 <211> 458  
 <212> PRT  
 <213> Mycobacterium leprae

<400> 214  
 Met Asn Thr Thr Pro Ser Ala His Glu Thr Ile His Glu Val Ile Val  
 1 5 10 15  
 Ile Gly Ser Gly Pro Ala Gly Tyr Thr Ala Ala Leu Tyr Ala Ala Arg  
 20 25 30  
 Ala Gln Leu Thr Pro Leu Val Phe Glu Gly Thr Ser Phe Gly Gly Ala  
 35 40 45  
 Leu Met Thr Thr Thr Glu Val Glu Asn Tyr Pro Gly Phe Arg Asn Gly  
 50 55 60  
 Ile Thr Gly Pro Glu Leu Met Asp Asp Met Arg Glu Gln Ala Leu Arg  
 65 70 75 80  
 Phe Gly Ala Glu Leu Arg Thr Glu Asp Val Glu Ser Val Ser Leu Arg  
 85 90 95  
 Gly Pro Ile Lys Ser Val Val Thr Ala Glu Gly Gln Thr Tyr Gln Ala

Arg	Ala	Val	Ile	Leu	Ala	Met	Gly	Thr	Ser	Val	Arg	Tyr	Leu	Gln	Ile
		115					120					125			
Pro	Gly	Glu	Gln	Glu	Leu	Leu	Gly	Arg	Gly	Val	Ser	Ala	Cys	Ala	Thr
	130					135					140				
Cys	Asp	Gly	Ser	Phe	Phe	Arg	Gly	Gln	Asp	Ile	Ala	Val	Ile	Gly	Gly
145				150						155				160	
Gly	Asp	Ser	Ala	Met	Glu	Glu	Ala	Leu	Phe	Leu	Thr	Arg	Phe	Ala	Arg
			165						170				175		
Ser	Val	Thr	Leu	Val	His	Arg	Arg	Asp	Glu	Phe	Arg	Ala	Ser	Lys	Ile
		180						185					190		
Met	Leu	Gly	Arg	Ala	Arg	Asn	Asn	Asp	Lys	Ile	Lys	Phe	Ile	Thr	Asn
	195						200					205			
His	Thr	Val	Val	Ala	Val	Asn	Gly	Tyr	Thr	Thr	Val	Thr	Gly	Leu	Arg
	210					215					220				
Leu	Arg	Asn	Thr	Thr	Thr	Gly	Glu	Glu	Thr	Thr	Leu	Val	Val	Thr	Gly
225					230					235				240	
Val	Phe	Val	Ala	Ile	Gly	His	Glu	Pro	Arg	Ser	Ser	Leu	Val	Ser	Asp
			245						250					255	
Val	Val	Asp	Ile	Asp	Pro	Asp	Gly	Tyr	Val	Leu	Val	Lys	Gly	Arg	Thr
		260					265					270			
Thr	Ser	Thr	Ser	Met	Asp	Gly	Val	Phe	Ala	Ala	Gly	Asp	Leu	Val	Asp
	275					280					285				
Arg	Thr	Tyr	Arg	Gln	Ala	Ile	Thr	Ala	Ala	Gly	Ser	Gly	Cys	Ala	Ala
	290					295				300					
Ala	Ile	Asp	Ala	Glu	Arg	Trp	Leu	Ala	Glu	His	Ala	Gly	Ser	Lys	Ala
305				310					315					320	
Asn	Glu	Thr	Thr	Glu	Glu	Thr	Gly	Asp	Val	Asp	Ser	Thr	Asp	Thr	Thr
			325					330						335	
Asp	Trp	Ser	Thr	Ala	Met	Thr	Asp	Ala	Lys	Asn	Ala	Gly	Val	Thr	Ile
	340						345					350			
Glu	Val	Thr	Asp	Ala	Ser	Phe	Phe	Ala	Asp	Val	Leu	Ser	Ser	Asn	Lys
	355					360					365				
Pro	Val	Leu	Val	Asp	Phe	Trp	Ala	Thr	Trp	Cys	Gly	Pro	Cys	Lys	Met
	370				375					380					
Val	Ala	Pro	Val	Leu	Glu	Ile	Ala	Ser	Glu	Gln	Arg	Asn	Gln	Leu	
385				390					395					400	
Thr	Val	Ala	Lys	Leu	Asp	Val	Asp	Thr	Asn	Pro	Glu	Met	Ala	Arg	Glu
			405					410					415		
Phe	Gln	Val	Val	Ser	Ile	Pro	Thr	Met	Ile	Leu	Phe	Gln	Gly	Gly	Gln
		420					425					430			
Pro	Val	Lys	Arg	Ile	Val	Gly	Ala	Lys	Gly	Lys	Ala	Ala	Leu	Leu	Arg
	435					440					445				
Asp	Leu	Ser	Asp	Val	Val	Pro	Asn	Leu	Asn						
450						455									

<210> 215

<211> 315

<212> PRT

<213> Mycoplasma pneumoniae

<400> 215

Met	Leu	Lys	Val	Lys	Ser	Asp	Phe	Leu	Thr	Lys	Asp	Gln	Val	Ile	Tyr
1				5					10					15	
Asp	Val	Ala	Ile	Val	Gly	Ala	Gly	Pro	Ala	Gly	Ile	Ala	Ala	Gly	Ile
		20						25				30			
Tyr	Gly	Lys	Arg	Ala	Asn	Leu	Asn	Leu	Ala	Ile	Ile	Glu	Gly	Ser	Thr
	35						40					45			
Pro	Gly	Gly	Lys	Val	Val	Lys	Thr	Asn	Ile	Val	Glu	Asn	Tyr	Pro	Gly
	50					55					60				
Tyr	Lys	Ser	Ile	Thr	Gly	Pro	Asp	Leu	Gly	Leu	Glu	Met	Tyr	Asn	His
65				70					75					80	
Leu	Ile	Asp	Leu	Glu	Pro	Thr	Phe	Phe	Tyr	Ala	Asn	Leu	Ile	Lys	Leu
			85					90					95		
Asp	Lys	Ala	Ala	Asp	Thr	Phe	Ile	Leu	Tyr	Leu	Asp	Asp	Lys	Thr	Val
		100						105					110		

Val	Phe	Ala	Lys	Thr	Val	Ile	Tyr	Ala	Thr	Gly	Met	Leu	Glu	Arg	Lys
		115					120					125			
Leu	Gly	Val	Ala	Lys	Glu	Asp	His	Phe	Tyr	Gly	Lys	Gly	Ile	Ser	Tyr
	130					135					140				
Cys	Ala	Ile	Cys	Asp	Gly	Ser	Leu	Tyr	Lys	Asp	Gln	Val	Val	Gly	Val
145					150					155					160
Val	Gly	Gly	Gly	Asn	Ser	Ala	Ile	Gln	Glu	Ala	Leu	Tyr	Leu	Ala	Ser
				165					170					175	
Met	Ala	Lys	Thr	Val	His	Leu	Ile	His	Arg	Arg	Glu	Gly	Phe	Arg	Ala
			180					185					190		
Asp	Glu	Thr	Ala	Leu	Asn	Lys	Leu	Arg	Asn	Leu	Pro	Asn	Val	Val	Phe
		195				200						205			
His	Leu	Asn	Tyr	Thr	Val	Lys	Glu	Leu	Leu	Gly	Asn	Asn	Thr	Leu	Asn
	210					215					220				
Gly	Ile	Val	Leu	Gln	Asn	Thr	Leu	Asp	His	Ser	Thr	Lys	Gln	Ile	Asp
225					230					235					240
Leu	Asn	Cys	Val	Phe	Pro	Tyr	Ile	Gly	Phe	Glu	Ser	Ile	Thr	Lys	Pro
				245					250					255	
Val	Glu	His	Leu	Asn	Leu	Lys	Leu	Asp	Pro	Gln	Gly	Phe	Leu	Ile	Thr
			260					265					270		
Asn	Glu	Gln	Met	Glu	Thr	Ser	Leu	Lys	Gly	Leu	Phe	Ala	Ala	Gly	Asp
		275					280					285			
Cys	Arg	Ser	Lys	His	Phe	Arg	Gln	Ile	Gly	Thr	Ala	Ile	Asn	Asp	Gly
	290					295					300				
Ile	Ile	Ala	Val	Leu	Thr	Ile	Arg	Asp	Val	Leu					
305					310					315					

<210> 216

<211> 311

<212> PRT

<213> Mycobacterium smegmatis

<400> 216

Met	Ser	Thr	Ser	Gln	Thr	Val	His	Asp	Val	Ile	Ile	Ile	Gly	Ser	Gly
1				5					10					15	
Pro	Ala	Gly	Tyr	Thr	Ala	Ala	Ile	Tyr	Ala	Ala	Arg	Ala	Gln	Leu	Lys
			20					25					30		
Pro	Leu	Val	Phe	Glu	Gly	Thr	Gln	Phe	Gly	Gly	Ala	Leu	Met	Thr	Thr
		35					40					45			
Thr	Glu	Val	Glu	Asn	Tyr	Pro	Gly	Phe	Arg	Glu	Gly	Ile	Thr	Gly	Pro
	50					55					60				
Glu	Leu	Met	Asp	Gln	Met	Arg	Glu	Gln	Ala	Leu	Arg	Phe	Arg	Ala	Asp
65					70					75				80	
Leu	Arg	Met	Glu	Asp	Val	Asp	Ala	Val	Gln	Leu	Glu	Gly	Pro	Val	Lys
				85					90				95		
Thr	Val	Val	Val	Gly	Asp	Glu	Thr	His	Gln	Ala	Arg	Ala	Val	Ile	Leu
			100					105					110		
Ala	Met	Gly	Ala	Ala	Ala	Arg	His	Leu	Gly	Val	Pro	Gly	Glu	Glu	Ala
		115					120					125			
Leu	Thr	Gly	Met	Gly	Val	Ser	Thr	Cys	Ala	Thr	Cys	Asp	Gly	Phe	Phe
	130					135					140				
Phe	Arg	Asp	Gln	Asp	Ile	Val	Val	Val	Gly	Gly	Gly	Asp	Ser	Ala	Met
145					150					155				160	
Glu	Glu	Ala	Thr	Phe	Leu	Thr	Arg	Phe	Ala	Arg	Ser	Val	Thr	Leu	Ile
				165					170				175		
His	Arg	Arg	Asp	Glu	Phe	Arg	Ala	Ser	Lys	Ile	Met	Leu	Glu	Arg	Ala
			180					185					190		
Arg	Ala	Asn	Glu	Lys	Ile	Thr	Phe	Leu	Thr	Asn	Thr	Glu	Ile	Thr	Gln
		195					200					205			
Ile	Glu	Gly	Asp	Pro	Lys	Val	Thr	Gly	Val	Arg	Leu	Arg	Asp	Thr	Val
	210				215						220				
Thr	Gly	Glu	Glu	Ser	Lys	Leu	Asp	Val	Thr	Gly	Val	Phe	Val	Ala	Ile
225					230					235				240	
Gly	His	Asp	Pro	Arg	Ser	Glu	Leu	Val	Arg	Gly	Gln	Val	Glu	Leu	Asp
				245					250				255		
Asp	Glu	Gly	Tyr	Val	Lys	Val	Gln	Gly	Arg	Thr	Thr	Tyr	Thr	Ser	Leu







145 150 155 160  
 Val Ile Gly Gly Gly Asp Ser Ala Ala Glu Glu Ala Met Phe Leu Ala  
 Lys Tyr Gly Ser Ser Val Thr Val Leu Val Arg Lys Asp Lys Leu Arg  
 Ala Ser Asn Ile Met Ala Asp Arg Leu Leu Ala His Pro Lys Cys Lys  
 Val Arg Phe Asn Thr Val Ala Thr Glu Val Ile Gly Glu Asn Lys Pro  
 Asn Gly Leu Met Thr His Leu Arg Val Lys Asp Val Leu Ser Asn Ala  
 Glu Glu Val Val Glu Ala Asn Gly Leu Phe Tyr Ala Val Gly His Asp  
 Pro Ala Ser Gly Leu Val Lys Gly Gln Val Glu Leu Asp Asp Glu Gly  
 Tyr Ile Ile Thr Lys Pro Gly Thr Ser Phe Thr Asn Val Glu Gly Val  
 Phe Ala Cys Gly Asp Val Gln Asp Lys Arg Tyr Arg Gln Ala Ile Thr  
 Ser Ala Gly Ser Gly Cys Val Ala Ala Leu Glu Ala Glu Lys Phe Ile  
 Ala Glu Thr Glu Thr His Gln Glu Ala Lys Pro Val Leu

<210> 220  
 <211> 310  
 <212> PRT  
 <213> Rickettsia prowazekii

<400> 220  
 Met Lys Ile Thr Thr Lys Val Leu Ile Ile Gly Ser Gly Pro Ala Gly  
 Leu Ser Ala Ala Ile Tyr Thr Ala Arg Ser Ala Leu Lys Pro Ile Leu  
 Ile Asn Gly Met Gln Pro Gly Gly Gln Leu Thr Met Thr Thr Asp Val  
 Glu Asn Tyr Pro Gly Phe Ala Glu Thr Ile Gln Gly Pro Trp Leu Met  
 Glu Gln Met Ser Met Gln Ala Lys Asn Val Gly Thr Glu Ile Ile Ser  
 Asp Tyr Val Glu Arg Val Asp Leu Ser Lys Arg Pro Phe Lys Ile Phe  
 Thr Gly Thr Gly Asn Glu Tyr Glu Ala Asp Ser Ile Ile Ile Cys Thr  
 Gly Ala Glu Ser Lys Trp Leu Gly Ile Ala Ser Glu Gln Glu Phe Arg  
 Gly Phe Gly Val Ser Ser Cys Ala Ile Cys Asp Gly Phe Phe Phe Lys  
 Asn Gln Glu Ile Val Val Val Gly Gly Gly Asn Ser Ala Leu Glu Glu  
 Ala Leu Tyr Leu Thr Asn His Ala Asn Lys Val Thr Val Val His Arg  
 Arg Asn Ser Phe Arg Ala Glu Lys Ile Leu Gln Asp Arg Leu Phe Lys  
 Asn Pro Lys Ile Ser Val Ile Trp Asp His Ile Ile Asp Glu Ile Val  
 Gly Ser Asn Lys Pro Lys Ala Val Thr Gly Val Lys Ile Gln Asn Val  
 Tyr Thr Asn Glu Ile Asn Leu Val Asn Cys Ser Gly Val Phe Ile Ala  
 Ile Gly His Ala Pro Asn Thr Ala Leu Phe Lys Gly Gln Ile Ala Ile  
 Asp Asp Asp Asn Tyr Ile Val Thr Gln Ser Gly Ser Thr Arg Thr Asn  
 Val Glu Gly Val Phe Ala Ala Gly Asp Val Gln Asp Lys Ile Tyr Arg

Gln Ala Val Thr Ala Ala Ala Ser Gly Cys Met Ala Ala Leu Glu Val  
 290 295 300  
 Ala Lys Phe Leu Asn Lys  
 305 310

<210> 221  
 <211> 322  
 <212> PRT  
 <213> Schizosaccharomyces pombe

<400> 221  
 Met Thr His Asn Lys Val Val Ile Ile Gly Ser Gly Pro Ala Gly His  
 1 5 10 15  
 Thr Ala Ala Ile Tyr Leu Ala Arg Gly Glu Leu Lys Pro Val Met Tyr  
 20 25 30  
 Glu Gly Met Leu Ala Asn Gly Ile Ala Ala Gly Gly Gln Leu Thr Thr  
 35 40 45  
 Thr Thr Asp Val Glu Asn Phe Pro Gly Phe Pro Asp Gly Ile Asn Gly  
 50 55 60  
 Thr Thr Leu Thr Glu Asn Phe Arg Ala Gln Ser Leu Arg Phe Gly Thr  
 65 70 75 80  
 Glu Ile Ile Thr Glu Thr Val Ser Lys Leu Asp Leu Ser Ser Arg Pro  
 85 90 95  
 Phe Lys Tyr Trp Leu Glu Gly Ala Glu Glu Glu Glu Pro His Thr Ala  
 100 105 110  
 Asp Ser Val Ile Leu Ala Thr Gly Ala Ser Ala Arg Arg Leu His Ile  
 115 120 125  
 Thr Gly Glu Asp Thr Tyr Trp Gln Ala Gly Ile Ser Ala Cys Ala Val  
 130 135 140  
 Cys Asp Gly Ala Val Pro Ile Tyr Arg Asn Lys Pro Leu Ala Val Val  
 145 150 155 160  
 Gly Gly Gly Asp Ser Ala Ala Glu Glu Ala Gln Phe Leu Thr Lys Tyr  
 165 170 175  
 Gly Ser Lys Val Tyr Val Leu Val Arg Arg Asp Lys Leu Arg Ala Ser  
 180 185 190  
 Pro Ile Met Ala Lys Arg Leu Leu Ala Asn Pro Lys Val Glu Val Leu  
 195 200 205  
 Trp Asn Thr Val Ala Glu Glu Ala Gln Gly Asp Gly Lys Leu Leu Asn  
 210 215 220  
 Asn Leu Arg Ile Lys Asn Thr Asn Thr Asn Glu Val Ser Asp Leu Gln  
 225 230 235 240  
 Val Asn Gly Leu Phe Tyr Ala Ile Gly His Ile Pro Ala Thr Lys Leu  
 245 250 255  
 Val Ala Glu Gln Ile Glu Leu Asp Glu Ala Gly Tyr Ile Lys Thr Ile  
 260 265 270  
 Asn Gly Thr Pro Arg Thr Ser Ile Pro Gly Phe Phe Ala Ala Gly Asp  
 275 280 285  
 Val Gln Asp Lys Val Phe Arg Gln Ala Ile Thr Ser Ala Gly Ser Gly  
 290 295 300  
 Cys Gln Ala Ala Leu Leu Ala Met His Tyr Leu Glu Glu Leu Glu Asp  
 305 310 315 320  
 Thr Asp

<210> 222  
 <211> 321  
 <212> PRT  
 <213> Streptomyces clavuligerus

<400> 222  
 Ser Asp Val Arg Asn Val Ile Ile Ile Gly Ser Gly Pro Ala Gly Tyr  
 1 5 10 15  
 Thr Ala Ala Leu Tyr Thr Ala Arg Ala Ser Leu Gln Pro Leu Val Phe  
 20 25 30  
 Glu Gly Ala Val Thr Ala Gly Gly Ala Leu Met Asn Thr Thr Asp Val



Arg	Asp	Thr	Leu	Arg	Ala	Ser	Lys	Ala	Met	Gln	Glu	Arg	Ala	Phe	Ala
			180					185					190		
Asp	Pro	Lys	Ile	Ser	Phe	Val	Trp	Asp	Ser	Glu	Val	Ala	Glu	Val	Gln
		195					200					205			
Gly	Asp	Gln	Lys	Leu	Ala	Gly	Leu	Lys	Leu	Arg	Asn	Val	Lys	Thr	Gly
	210					215					220				
Glu	Leu	Ser	Asp	Leu	Pro	Val	Thr	Gly	Leu	Phe	Ile	Ala	Ile	Gly	His
	225				230					235					240
Asp	Pro	Arg	Thr	Glu	Leu	Phe	Lys	Gly	Gln	Leu	Asp	Leu	Asp	Pro	Glu
			245						250					255	
Gly	Tyr	Leu	Lys	Val	Asp	Ala	Pro	Ser	Thr	Arg	Thr	Asn	Leu	Thr	Gly
			260					265					270		
Val	Phe	Gly	Ala	Gly	Asp	Val	Val	Asp	His	Thr	Tyr	Arg	Gln	Ala	Ile
	275						280					285			
Thr	Ala	Ala	Gly	Thr	Gly	Cys	Ser	Ala	Ala	Val	Asp	Ala	Glu	Pro	Phe
	290					295					300				
Leu	Ala	Ala	Leu	Ser	Asp	Glu	Asp	Lys	Ala	Glu	Pro	Glu	Lys	Thr	Ala
	305				310					315					320
Val															

<210> 224

<211> 307

<212> PRT

<213> *Treponema pallidum*

<400> 224

Met	Glu	Thr	Asp	Tyr	Asp	Val	Ile	Ile	Val	Gly	Ala	Gly	Ala	Ala	Gly
1				5					10					15	
Leu	Ser	Ala	Ala	Gln	Tyr	Ala	Cys	Arg	Ala	Asn	Leu	Arg	Thr	Leu	Val
			20					25					30		
Ile	Glu	Ser	Lys	Ala	His	Gly	Gly	Gln	Ala	Leu	Leu	Ile	Asp	Ser	Leu
		35					40					45			
Glu	Asn	Tyr	Pro	Gly	Tyr	Ala	Thr	Pro	Ile	Ser	Gly	Phe	Glu	Tyr	Ala
	50					55					60				
Glu	Asn	Met	Lys	Lys	Gln	Ala	Val	Ala	Phe	Gly	Ala	Gln	Ile	Ala	Tyr
	65				70				75						80
Glu	Glu	Val	Thr	Thr	Ile	Gly	Lys	Arg	Asp	Ser	Val	Phe	His	Ile	Thr
			85					90					95		
Thr	Gly	Thr	Gly	Ala	Tyr	Thr	Ala	Met	Ser	Val	Ile	Leu	Ala	Thr	Gly
			100					105				110			
Ala	Glu	His	Arg	Lys	Met	Gly	Ile	Pro	Gly	Glu	Ser	Glu	Phe	Leu	Gly
		115					120					125			
Arg	Gly	Val	Ser	Tyr	Cys	Ala	Thr	Cys	Asp	Gly	Pro	Phe	Phe	Arg	Asn
	130					135					140				
Lys	His	Val	Val	Val	Ile	Gly	Gly	Gly	Asp	Ala	Ala	Cys	Asp	Glu	Ser
	145				150				155						160
Leu	Val	Leu	Ser	Arg	Leu	Thr	Asp	Arg	Val	Thr	Met	Ile	His	Arg	Arg
			165					170					175		
Asp	Thr	Leu	Arg	Ala	Gln	Lys	Ala	Ile	Ala	Glu	Arg	Thr	Leu	Lys	Asn
		180						185					190		
Pro	His	Ile	Ala	Val	Gln	Trp	Asn	Thr	Thr	Leu	Glu	Ala	Val	Arg	Gly
	195						200					205			
Glu	Thr	Lys	Val	Ser	Ser	Val	Leu	Leu	Lys	Asp	Val	Lys	Thr	Gly	Glu
	210					215					220				
Thr	Arg	Glu	Leu	Ala	Cys	Asp	Ala	Val	Phe	Phe	Phe	Ile	Gly	Met	Val
	225				230				235						240
Pro	Ile	Thr	Gly	Leu	Leu	Pro	Asp	Ala	Glu	Lys	Asp	Ser	Thr	Gly	Tyr
			245					250						255	
Ile	Val	Thr	Asp	Glu	Met	Arg	Thr	Ser	Val	Glu	Gly	Ile	Phe	Ala	
		260					265					270			
Ala	Gly	Asp	Val	Arg	Ala	Lys	Ser	Phe	Arg	Gln	Val	Ile	Thr	Ala	Thr
	275						280					285			
Ser	Asp	Gly	Ala	Leu	Ala	Ala	His	Ala	Ala	Ala	Ser	Tyr	Ile	Asp	Thr
	290					295					300				
Leu	Gln	Asn													

<210> 225  
 <211> 45  
 <212> PRT  
 <213> *Vibrio fischeri*

<400> 225  
 Met Asn Val Lys His Ser Lys Leu Leu Ile Leu Gly Ser Gly Pro Ala  
 1 5 10 15  
 Gly Tyr Thr Ala Val Tyr Ala Ala Arg Ala Asn Leu Asn Pro Val  
 20 25 30  
 Met Ile Thr Gly Met Gln Gln Gly Gly Gln Leu Thr Asn  
 35 40 45

<210> 226  
 <211> 318  
 <212> PRT  
 <213> *Saccharomyces cerevisiae*

<400> 226  
 Val His Asn Lys Val Thr Ile Ile Gly Ser Gly Pro Ala Ala His Thr  
 1 5 10 15  
 Ala Ala Ile Tyr Leu Ala Arg Ala Glu Ile Lys Pro Ile Leu Tyr Glu  
 20 25 30  
 Gly Met Met Ala Asn Gly Ile Ala Ala Gly Gly Gln Leu Thr Thr Thr  
 35 40 45  
 Thr Glu Ile Glu Asn Phe Pro Gly Phe Pro Asp Gly Leu Thr Gly Ser  
 50 55 60  
 Glu Leu Met Asp Arg Met Arg Glu Gln Ser Thr Lys Phe Gly Thr Glu  
 65 70 75 80  
 Ile Ile Thr Glu Thr Val Ser Lys Val Asp Leu Ser Ser Lys Pro Phe  
 85 90 95  
 Lys Leu Trp Thr Glu Phe Asn Glu Asp Ala Glu Pro Val Thr Thr Asp  
 100 105 110  
 Ala Ile Ile Leu Ala Thr Gly Ala Ser Ala Lys Arg Met His Leu Pro  
 115 120 125  
 Gly Glu Glu Thr Tyr Trp Gln Lys Gly Ile Ser Ala Cys Ala Val Cys  
 130 135 140  
 Asp Gly Ala Val Pro Ile Phe Arg Asn Lys Pro Leu Ala Val Ile Gly  
 145 150 155 160  
 Gly Gly Asp Ser Ala Cys Glu Glu Ala Gln Phe Leu Thr Lys Tyr Gly  
 165 170 175  
 Ser Lys Val Phe Met Leu Val Arg Lys Asp His Leu Arg Ala Ser Thr  
 180 185 190  
 Ile Met Gln Lys Arg Ala Glu Lys Asn Glu Lys Ile Glu Ile Leu Tyr  
 195 200 205  
 Asn Thr Val Ala Leu Glu Ala Lys Gly Asp Gly Lys Leu Leu Asn Ala  
 210 215 220  
 Leu Arg Ile Lys Asn Thr Lys Lys Asn Glu Glu Thr Asp Leu Pro Val  
 225 230 235 240  
 Ser Gly Leu Phe Tyr Ala Ile Gly His Thr Pro Ala Thr Lys Ile Val  
 245 250 255  
 Ala Gly Gln Val Asp Thr Asp Glu Ala Gly Tyr Ile Lys Thr Val Pro  
 260 265 270  
 Gly Ser Ser Leu Thr Ser Val Pro Gly Phe Phe Ala Ala Gly Asp Val  
 275 280 285  
 Gln Asp Ser Lys Tyr Arg Gln Ala Ile Thr Ser Ala Gly Ser Gly Cys  
 290 295 300  
 Met Ala Ala Leu Asp Ala Glu Lys Tyr Leu Thr Ser Leu Glu  
 305 310 315

<210> 227  
 <211> 342

<212> PRT  
 <213> *Saccharomyces cerevisiae*

<400> 227

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Met Ile Lys His Ile Val Ser Pro Phe Arg Thr Asn Phe Val Gly Ile
 1           5           10
Ser Lys Ser Val Leu Ser Arg Met Ile His His Lys Val Thr Ile Ile
          20           25           30
Gly Ser Gly Pro Ala Ala His Thr Ala Ala Ile Tyr Leu Ala Arg Ala
          35           40           45
Glu Met Lys Pro Thr Leu Tyr Glu Gly Met Met Ala Asn Gly Ile Ala
          50           55           60
Ala Gly Gly Gln Leu Thr Thr Thr Thr Asp Ile Glu Asn Phe Pro Gly
65          70          75          80
Phe Pro Glu Ser Leu Ser Gly Ser Glu Leu Met Glu Arg Met Arg Lys
          85          90          95
Gln Ser Ala Lys Phe Gly Thr Asn Ile Ile Thr Glu Thr Val Ser Lys
          100          105          110
Val Asp Leu Ser Ser Lys Pro Phe Arg Leu Trp Thr Glu Phe Asn Glu
          115          120          125
Asp Ala Glu Pro Val Thr Thr Asp Ala Ile Ile Leu Ala Thr Gly Ala
          130          135          140
Ser Ala Lys Arg Met His Leu Pro Gly Glu Glu Thr Tyr Trp Gln Gln
145          150          155          160
Gly Ile Ser Ala Cys Ala Val Cys Asp Gly Ala Val Pro Ile Phe Arg
          165          170          175
Asn Lys Pro Leu Ala Val Ile Gly Gly Gly Asp Ser Ala Cys Glu Glu
          180          185          190
Ala Glu Phe Leu Thr Lys Tyr Ala Ser Lys Val Tyr Ile Leu Val Arg
          195          200          205
Lys Asp His Phe Arg Ala Ser Val Ile Met Gln Arg Arg Ile Glu Lys
          210          215          220
Asn Pro Asn Ile Ile Val Leu Phe Asn Thr Val Ala Leu Glu Ala Lys
225          230          235          240
Gly Asp Gly Lys Leu Leu Asn Met Leu Arg Ile Lys Asn Thr Lys Ser
          245          250          255
Asn Val Glu Asn Asp Leu Glu Val Asn Gly Leu Phe Tyr Ala Ile Gly
          260          265          270
His Ser Pro Ala Thr Asp Ile Val Lys Gly Gln Val Asp Glu Glu Glu
          275          280          285
Thr Gly Tyr Ile Lys Thr Val Pro Gly Ser Ser Leu Thr Ser Val Pro
          290          295          300
Gly Phe Phe Ala Ala Gly Asp Val Gln Asp Ser Arg Tyr Arg Gln Ala
305          310          315          320
Val Thr Ser Ala Gly Ser Gly Cys Ile Ala Ala Leu Asp Ala Glu Arg
          325          330          335
Tyr Leu Ser Ala Gln Glu
          340
  
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<210> 228  
 <211> 499  
 <212> PRT  
 <213> *Bos taurus*

<400> 228

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Met Asn Gly Ser Lys Asp Leu Pro Glu Pro Tyr Asp Tyr Asp Leu Ile
 1           5           10
Ile Ile Gly Gly Gly Ser Gly Gly Leu Ala Ala Ala Lys Glu Ala Ala
          20           25           30
Lys Tyr Asp Lys Lys Val Met Val Leu Asp Phe Val Thr Pro Thr Pro
          35           40           45
Leu Gly Thr Arg Trp Gly Leu Gly Gly Thr Cys Val Asn Val Gly Cys
          50           55           60
Ile Pro Lys Lys Leu Met His Gln Ala Ala Leu Leu Gly Gln Ala Leu
65          70          75          80
Arg Asp Ser Arg Asn Tyr Gly Trp Asn Val Glu Glu Thr Val Lys His
  
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				85				90					95		
Asp	Trp	Glu	Arg	Met	Thr	Glu	Ala	Val	Gln	Asn	His	Ile	Gly	Ser	Leu
			100					105					110		
Asn	Trp	Gly	Tyr	Arg	Val	Ala	Leu	Arg	Glu	Lys	Lys	Val	Thr	Tyr	Glu
		115					120					125			
Asn	Ala	Tyr	Gly	Glu	Phe	Val	Gly	Pro	His	Arg	Ile	Lys	Ala	Thr	Asn
	130					135					140				
Asn	Lys	Gly	Lys	Glu	Lys	Ile	Tyr	Ser	Ala	Glu	Arg	Phe	Leu	Ile	Ala
145				150						155				160	
Thr	Gly	Glu	Arg	Pro	Arg	Tyr	Leu	Gly	Ile	Pro	Gly	Asp	Lys	Glu	Tyr
				165					170					175	
Cys	Ile	Ser	Ser	Asp	Asp	Leu	Phe	Ser	Leu	Pro	Tyr	Cys	Pro	Gly	Lys
			180					185					190		
Thr	Leu	Val	Val	Gly	Ala	Ser	Tyr	Val	Ala	Leu	Glu	Cys	Ala	Gly	Phe
	195						200					205			
Leu	Ala	Gly	Ile	Gly	Leu	Asp	Val	Thr	Val	Met	Val	Arg	Ser	Ile	Leu
	210					215					220				
Leu	Arg	Gly	Phe	Asp	Gln	Asp	Met	Ala	Asn	Lys	Ile	Gly	Glu	His	Met
225				230						235				240	
Gln	Glu	His	Gly	Ile	Lys	Phe	Ile	Arg	Gln	Phe	Val	Pro	Ile	Lys	Val
			245						250					255	
Glu	Gln	Ile	Glu	Ala	Gly	Thr	Pro	Gly	Arg	Leu	Arg	Val	Ile	Ala	Lys
			260					265					270		
Ser	Thr	Asp	Ser	Asp	Gln	Thr	Ile	Glu	Gly	Glu	Tyr	Asn	Thr	Val	Leu
	275					280						285			
Leu	Ala	Ile	Gly	Arg	Asp	Ala	Cys	Thr	Arg	Lys	Ile	Gly	Leu	Glu	Asn
	290					295					300				
Val	Gly	Val	Lys	Ile	Asn	Glu	Lys	Thr	Gly	Lys	Ile	Pro	Val	Thr	Glu
305				310						315				320	
Glu	Glu	Gln	Thr	Asn	Val	Pro	Tyr	Ile	Tyr	Ala	Ile	Gly	Asp	Ile	Leu
			325						330					335	
Glu	Gly	Lys	Leu	Glu	Leu	Thr	Pro	Val	Ala	Ile	Gln	Ala	Gly	Arg	Leu
			340					345					350		
Leu	Ala	Gln	Arg	Leu	Tyr	Gly	Gly	Ser	Thr	Val	Lys	Cys	Asp	Tyr	Glu
	355					360						365			
Asn	Val	Pro	Thr	Thr	Val	Phe	Thr	Pro	Leu	Glu	Tyr	Gly	Ser	Cys	Gly
	370					375					380				
Leu	Ser	Glu	Glu	Lys	Ala	Val	Glu	Lys	Phe	Gly	Glu	Glu	Asn	Val	Glu
385				390						395				400	
Val	Tyr	His	Ser	Tyr	Phe	Trp	Pro	Leu	Glu	Trp	Thr	Ile	Pro	Ser	Arg
			405						410					415	
Asp	Asn	Asn	Lys	Cys	Tyr	Ala	Lys	Val	Val	Cys	Asn	Ile	Lys	Asp	Asn
			420					425					430		
Glu	Arg	Val	Val	Gly	Phe	His	Val	Leu	Gly	Pro	Asn	Ala	Gly	Glu	Val
	435						440					445			
Thr	Gln	Gly	Phe	Ala	Ala	Ala	Leu	Lys	Cys	Gly	Leu	Thr	Lys	Asp	Gln
	450					455					460				
Leu	Asp	Ser	Thr	Ile	Gly	Ile	His	Pro	Val	Cys	Ala	Glu	Val	Phe	Thr
465				470						475				480	
Thr	Leu	Ser	Val	Thr	Lys	Arg	Ser	Gly	Gly	Asn	Ile	Leu	Gln	Thr	Gly
				485					490					495	

Cys Cys Gly

<210> 229  
 <211> 523  
 <212> PRT  
 <213> Caenorhabditis elegans

<400> 229  
 Met Tyr Ile Lys Gly Asn Ala Val Gly Gly Leu Lys Glu Leu Lys Ala  
 1 5 10 15  
 Leu Lys Gln Asp Tyr Leu Lys Glu Trp Leu Arg Asp His Thr Tyr Asp  
 20 25 30  
 Leu Ile Val Ile Gly Gly Gly Ser Gly Gly Leu Ala Ala Lys Glu  
 35 40 45



Ala	Ser	Arg	Leu	Gly	Lys	Lys	Val	Ala	Cys	Leu	Asp	Phe	Val	Lys	Pro
50						55					60				
Ser	Pro	Gln	Gly	Thr	Ser	Trp	Gly	Leu	Gly	Gly	Thr	Cys	Val	Asn	Val
65					70					75					80
Gly	Cys	Ile	Pro	Lys	Lys	Leu	Met	His	Gln	Ala	Ser	Leu	Leu	Gly	His
				85					90					95	
Ser	Ile	His	Asp	Ala	Lys	Lys	Tyr	Gly	Trp	Lys	Leu	Pro	Glu	Gly	Lys
			100					105					110		
Val	Glu	His	Gln	Trp	Asn	His	Leu	Arg	Asp	Ser	Val	Gln	Asp	His	Ile
		115					120					125			
Ala	Ser	Leu	Asn	Trp	Gly	Tyr	Arg	Val	Gln	Leu	Arg	Glu	Lys	Thr	Val
130					135						140				
Thr	Tyr	Ile	Asn	Ser	Tyr	Gly	Glu	Phe	Thr	Gly	Pro	Phe	Glu	Ile	Ser
145					150					155					160
Ala	Thr	Asn	Lys	Lys	Lys	Lys	Val	Glu	Lys	Leu	Thr	Ala	Asp	Arg	Phe
				165					170					175	
Leu	Ile	Ser	Thr	Gly	Leu	Arg	Pro	Lys	Tyr	Pro	Glu	Ile	Pro	Gly	Val
			180					185					190		
Lys	Glu	Tyr	Thr	Ile	Thr	Ser	Asp	Asp	Leu	Phe	Gln	Leu	Pro	Tyr	Ser
		195					200				205				
Pro	Gly	Lys	Thr	Leu	Cys	Val	Gly	Ala	Ser	Tyr	Val	Ser	Leu	Glu	Cys
210						215					220				
Ala	Gly	Phe	Leu	His	Gly	Phe	Gly	Phe	Asp	Val	Thr	Val	Met	Val	Arg
225					230					235					240
Ser	Ile	Leu	Leu	Arg	Gly	Phe	Asp	Gln	Asp	Met	Ala	Glu	Arg	Ile	Arg
				245					250					255	
Lys	His	Met	Ile	Ala	Tyr	Gly	Met	Lys	Phe	Glu	Ala	Gly	Val	Pro	Thr
			260					265					270		
Arg	Ile	Glu	Gln	Ile	Asp	Glu	Lys	Thr	Asp	Glu	Lys	Ala	Gly	Lys	Tyr
		275					280					285			
Arg	Val	Phe	Trp	Pro	Lys	Lys	Asn	Glu	Glu	Thr	Gly	Glu	Met	Gln	Glu
290						295					300				
Val	Ser	Glu	Glu	Tyr	Asn	Thr	Ile	Leu	Met	Ala	Ile	Gly	Arg	Glu	Ala
305					310					315					320
Val	Thr	Asp	Asp	Val	Gly	Leu	Thr	Thr	Ile	Gly	Val	Glu	Arg	Ala	Lys
				325					330					335	
Ser	Lys	Lys	Val	Leu	Gly	Arg	Arg	Glu	Gln	Ser	Thr	Thr	Ile	Pro	Trp
			340					345					350		
Val	Tyr	Ala	Ile	Gly	Asp	Val	Leu	Glu	Gly	Thr	Pro	Glu	Leu	Thr	Pro
		355					360					365			
Val	Ala	Ile	Gln	Ala	Gly	Arg	Val	Leu	Met	Arg	Arg	Ile	Phe	Asp	Gly
370					375						380				
Ala	Asn	Glu	Leu	Thr	Glu	Tyr	Asp	Gln	Ile	Pro	Thr	Thr	Val	Phe	Thr
385					390					395					400
Pro	Leu	Glu	Tyr	Gly	Cys	Cys	Gly	Leu	Ser	Glu	Glu	Asp	Ala	Met	Met
				405					410					415	
Lys	Tyr	Gly	Lys	Asp	Asn	Ile	Ile	Ile	Tyr	His	Asn	Val	Phe	Asn	Pro
			420					425					430		
Leu	Glu	Tyr	Thr	Ile	Ser	Glu	Arg	Met	Asp	Lys	Asp	His	Cys	Tyr	Leu
		435					440					445			
Lys	Met	Ile	Cys	Leu	Arg	Asn	Glu	Glu	Glu	Lys	Val	Val	Gly	Phe	His
450						455					460				
Ile	Leu	Thr	Pro	Asn	Ala	Gly	Glu	Val	Thr	Gln	Gly	Phe	Gly	Ile	Ala
465					470					475					480
Leu	Lys	Leu	Ala	Ala	Lys	Lys	Ala	Asp	Phe	Asp	Arg	Leu	Ile	Gly	Ile
				485					490					495	
His	Pro	Thr	Val	Ala	Glu	Asn	Phe	Thr	Thr	Leu	Thr	Leu	Glu	Lys	Lys
			500					505					510		
Glu	Gly	Asp	Glu	Glu	Leu	Gln	Ala	Ser	Gly	Cys					
		515					520								

<210> 230

<211> 497

<212> PRT

<213> Homo sapiens

<400> 230  
Met Asn Gly Pro Glu Asp Leu Pro Lys Ser Tyr Asp Tyr Asp Leu Ile  
1 5 10 15  
Ile Ile Gly Gly Gly Ser Gly Gly Leu Ala Ala Ala Lys Glu Ala Ala  
20 25 30  
Gln Tyr Gly Lys Lys Val Met Val Leu Asp Phe Val Thr Pro Thr Pro  
35 40 45  
Leu Gly Thr Arg Trp Gly Leu Gly Gly Thr Cys Val Asn Val Gly Cys  
50 55 60  
Ile Pro Lys Lys Leu Met His Gln Ala Ala Leu Leu Gly Gln Ala Leu  
65 70 75 80  
Gln Asp Ser Arg Asn Tyr Gly Trp Lys Val Glu Glu Thr Val Lys His  
85 90 95  
Asp Trp Asp Arg Met Ile Glu Ala Val Gln Asn His Ile Gly Ser Leu  
100 105 110  
Asn Trp Gly Tyr Arg Val Ala Leu Arg Glu Lys Lys Val Tyr Glu  
115 120 125  
Asn Ala Tyr Gly Gln Phe Ile Gly Pro His Arg Ile Lys Ala Thr Asn  
130 135 140  
Asn Lys Gly Lys Glu Lys Ile Tyr Ser Ala Glu Ser Phe Leu Ile Ala  
145 150 155 160  
Thr Gly Glu Arg Pro Arg Tyr Leu Gly Ile Pro Gly Asp Lys Glu Tyr  
165 170 175  
Cys Ile Ser Ser Asp Asp Leu Phe Ser Leu Pro Tyr Cys Pro Gly Lys  
180 185 190  
Thr Leu Val Val Gly Ala Ser Tyr Val Ala Leu Glu Cys Ala Gly Phe  
195 200 205  
Leu Ala Gly Ile Gly Leu Gly Val Thr Val Met Val Arg Ser Ile Leu  
210 215 220  
Leu Arg Gly Phe Asp Gln Asp Met Ala Asn Lys Ile Gly Glu His Met  
225 230 235 240  
Glu Glu His Gly Ile Lys Phe Ile Arg Gln Phe Val Pro Ile Lys Val  
245 250 255  
Glu Gln Ile Glu Ala Gly Thr Pro Gly Arg Leu Arg Val Val Ala Gln  
260 265 270  
Ser Thr Asn Ser Glu Glu Ile Ile Glu Gly Glu Tyr Asn Thr Val Met  
275 280 285  
Leu Ala Ile Gly Arg Asp Ala Cys Thr Arg Lys Ile Gly Leu Glu Thr  
290 295 300  
Val Gly Val Lys Ile Asn Glu Lys Thr Gly Lys Ile Pro Val Thr Asp  
305 310 315 320  
Glu Glu Gln Thr Asn Val Pro Tyr Ile Tyr Ala Ile Gly Asp Ile Leu  
325 330 335  
Glu Asp Lys Val Glu Leu Thr Pro Val Ala Ile Gln Ala Gly Arg Leu  
340 345 350  
Leu Ala Gln Arg Leu Tyr Ala Gly Ser Thr Val Lys Cys Asp Tyr Glu  
355 360 365  
Asn Val Pro Thr Thr Val Phe Thr Pro Leu Glu Tyr Gly Ala Cys Gly  
370 375 380  
Leu Ser Glu Glu Lys Ala Val Glu Lys Phe Gly Glu Glu Asn Ile Glu  
385 390 395 400  
Val Tyr His Ser Tyr Phe Trp Pro Leu Glu Trp Thr Ile Pro Ser Arg  
405 410 415  
Asp Asn Asn Lys Cys Tyr Ala Lys Ile Ile Cys Asn Thr Lys Asp Asn  
420 425 430  
Glu Arg Val Val Gly Phe His Val Leu Gly Pro Asn Ala Gly Glu Val  
435 440 445  
Thr Gln Gly Phe Ala Ala Ala Leu Lys Cys Gly Leu Thr Lys Lys Gln  
450 455 460  
Leu Asp Ser Thr Ile Gly Ile His Pro Val Cys Ala Glu Val Phe Thr  
465 470 475 480  
Thr Leu Ser Val Thr Lys Arg Ser Gly Ala Ser Ile Leu Gln Ala Gly  
485 490 495  
Cys

<210> 231

<211> 541  
 <212> PRT  
 <213> Plasmodium falciparum

<400> 231

Met	Cys	Lys	Asp	Lys	Asn	Glu	Lys	Lys	Asn	Tyr	Glu	His	Val	Asn	Ala	
1				5					10					15		
Asn	Glu	Lys	Asn	Gly	Tyr	Leu	Ala	Ser	Glu	Lys	Asn	Glu	Leu	Thr	Lys	
			20					25					30			
Asn	Lys	Val	Glu	Glu	His	Thr	Tyr	Asp	Tyr	Asp	Tyr	Val	Val	Ile	Gly	
		35					40					45				
Gly	Gly	Pro	Gly	Gly	Met	Ala	Ser	Ala	Lys	Glu	Ala	Ala	Ala	His	Gly	
	50					55					60					
Ala	Arg	Val	Leu	Leu	Phe	Asp	Tyr	Val	Lys	Pro	Ser	Ser	Gln	Gly	Thr	
65					70					75				80		
Lys	Trp	Gly	Ile	Gly	Gly	Thr	Cys	Val	Asn	Val	Gly	Cys	Val	Pro	Lys	
				85					90					95		
Lys	Leu	Met	His	Tyr	Ala	Gly	His	Met	Gly	Ser	Ile	Phe	Lys	Leu	Asp	
			100					105					110			
Ser	Lys	Ala	Tyr	Gly	Trp	Lys	Phe	Asp	Asn	Leu	Lys	His	Asp	Trp	Lys	
		115					120					125				
Lys	Leu	Val	Thr	Thr	Val	Gln	Ser	His	Ile	Arg	Ser	Leu	Asn	Phe	Ser	
	130					135					140					
Tyr	Met	Thr	Gly	Leu	Arg	Ser	Ser	Lys	Val	Lys	Tyr	Ile	Asn	Gly	Leu	
145					150					155				160		
Ala	Lys	Leu	Lys	Asp	Lys	Asn	Thr	Val	Ser	Tyr	Tyr	Leu	Lys	Gly	Asp	
				165					170					175		
Leu	Ser	Lys	Glu	Glu	Thr	Val	Thr	Gly	Lys	Tyr	Ile	Leu	Ile	Ala	Thr	
			180					185					190			
Gly	Cys	Arg	Pro	His	Ile	Pro	Asp	Asp	Val	Glu	Gly	Ala	Lys	Glu	Leu	
		195					200					205				
Ser	Ile	Thr	Ser	Asp	Asp	Ile	Phe	Ser	Leu	Lys	Lys	Asp	Pro	Gly	Lys	
	210					215						220				
Thr	Leu	Val	Val	Gly	Ala	Ser	Tyr	Val	Ala	Leu	Glu	Cys	Ser	Gly	Phe	
225					230					235				240		
Leu	Asn	Ser	Leu	Gly	Tyr	Asp	Val	Thr	Val	Ala	Val	Arg	Ser	Ile	Val	
				245					250					255		
Leu	Arg	Gly	Phe	Asp	Gln	Gln	Cys	Ala	Val	Lys	Val	Lys	Leu	Tyr	Met	
			260					265					270			
Glu	Glu	Gln	Gly	Val	Met	Phe	Lys	Asn	Gly	Ile	Leu	Pro	Lys	Lys	Leu	
		275					280					285				
Thr	Lys	Met	Asp	Asp	Lys	Ile	Leu	Val	Glu	Phe	Ser	Asp	Lys	Thr	Ser	
	290					295					300					
Glu	Leu	Tyr	Asp	Thr	Val	Leu	Tyr	Ala	Ile	Gly	Arg	Lys	Gly	Asp	Ile	
305					310					315				320		
Asp	Gly	Leu	Asn	Leu	Glu	Ser	Leu	Asn	Met	Asn	Val	Asn	Lys	Ser	Asn	
			325					330						335		
Asn	Lys	Ile	Ile	Ala	Asp	His	Leu	Ser	Cys	Thr	Asn	Ile	Pro	Ser	Ile	
			340					345					350			
Phe	Ala	Val	Gly	Asp	Val	Ala	Glu	Asn	Val	Pro	Glu	Leu	Ala	Pro	Val	
		355					360					365				
Ala	Ile	Lys	Ala	Gly	Glu	Ile	Leu	Ala	Arg	Arg	Leu	Phe	Lys	Asp	Ser	
	370					375					380					
Asp	Glu	Ile	Met	Asp	Tyr	Ser	Tyr	Ile	Pro	Thr	Ser	Ile	Tyr	Thr	Pro	
385					390					395				400		
Ile	Glu	Tyr	Gly	Ala	Cys	Gly	Tyr	Ser	Glu	Glu	Lys	Ala	Tyr	Glu	Leu	
			405					410						415		
Tyr	Gly	Lys	Ser	Asn	Val	Glu	Val	Phe	Leu	Gln	Glu	Phe	Asn	Asn	Leu	
			420					425					430			
Glu	Ile	Ser	Ala	Val	His	Arg	Gln	Lys	His	Ile	Arg	Ala	Gln	Lys	Asp	
		435					440					445				
Glu	Tyr	Asp	Leu	Asp	Val	Ser	Ser	Thr	Cys	Leu	Ala	Lys	Leu	Val	Cys	
	450					455					460					
Leu	Lys	Asn	Glu	Asp	Asn	Arg	Val	Ile	Gly	Phe	His	Tyr	Val	Gly	Pro	
465					470					475				480		
Asn	Ala	Gly	Glu	Val	Thr	Gln	Gly	Met	Ala	Leu	Ala	Leu	Arg	Leu	Lys	
				485					490					495		

Val	Lys	Lys	Lys	Asp	Phe	Asp	Asn	Cys	Ile	Gly	Ile	His	Pro	Thr	Asp
			500					505					510		
Ala	Glu	Ser	Phe	Met	Asn	Leu	Phe	Val	Thr	Ile	Ser	Ser	Gly	Leu	Ser
		515					520					525			
Tyr	Ala	Ala	Lys	Gly	Gly	Cys	Gly	Gly	Gly	Lys	Cys	Gly			
	530					535					540				

<210> 232  
 <211> 535  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 232

Met	Ala	Ala	Ser	Pro	Lys	Ile	Gly	Ile	Gly	Ile	Ala	Ser	Val	Ser	Ser
1				5					10					15	
Pro	His	Arg	Val	Ser	Ala	Ala	Ser	Ser	Ala	Leu	Ser	Pro	Pro	Pro	His
			20					25					30		
Leu	Phe	Phe	Leu	Thr	Thr	Thr	Thr	Thr	Thr	Arg	His	Gly	Gly	Ser	Tyr
		35					40					45			
Leu	Leu	Arg	Gln	Pro	Thr	Arg	Thr	Arg	Ser	Ser	Asp	Ser	Leu	Arg	Leu
	50					55					60				
Arg	Val	Ser	Ala	Thr	Ala	Asn	Ser	Pro	Ser	Ser	Ser	Ser	Ser	Gly	Gly
65					70					75					80
Glu	Ile	Ile	Glu	Asn	Val	Val	Ile	Ile	Gly	Ser	Gly	Pro	Ala	Gly	Tyr
				85					90					95	
Thr	Ala	Ala	Ile	Tyr	Ala	Ala	Arg	Ala	Asn	Leu	Lys	Pro	Val	Val	Phe
			100					105					110		
Glu	Gly	Tyr	Gln	Met	Gly	Gly	Val	Pro	Gly	Gly	Gln	Leu	Met	Thr	Thr
		115					120					125			
Thr	Glu	Val	Glu	Asn	Phe	Pro	Gly	Phe	Pro	Asp	Gly	Ile	Thr	Gly	Pro
	130					135					140				
Asp	Leu	Met	Glu	Lys	Met	Arg	Lys	Gln	Ala	Glu	Arg	Trp	Gly	Ala	Glu
145					150					155					160
Leu	Tyr	Pro	Glu	Asp	Val	Glu	Ser	Leu	Ser	Val	Thr	Thr	Ala	Pro	Phe
				165					170					175	
Thr	Val	Gln	Thr	Ser	Glu	Arg	Lys	Val	Lys	Cys	His	Ser	Ile	Ile	Tyr
		180						185					190		
Ala	Thr	Gly	Ala	Thr	Ala	Arg	Arg	Leu	Arg	Leu	Pro	Arg	Glu	Glu	Glu
		195					200					205			
Phe	Trp	Ser	Arg	Gly	Ile	Ser	Ala	Cys	Ala	Ile	Cys	Asp	Gly	Ala	Ser
	210					215					220				
Pro	Leu	Phe	Lys	Gly	Gln	Val	Leu	Ala	Val	Val	Gly	Gly	Gly	Asp	Thr
225					230					235					240
Ala	Thr	Glu	Glu	Ala	Leu	Tyr	Leu	Thr	Lys	Tyr	Ala	Arg	His	Val	His
				245					250					255	
Leu	Leu	Val	Arg	Arg	Asp	Gln	Leu	Arg	Ala	Ser	Lys	Ala	Met	Gln	Asp
			260					265					270		
Arg	Val	Ile	Asn	Asn	Pro	Asn	Ile	Thr	Val	His	Tyr	Asn	Thr	Glu	Thr
		275					280					285			
Val	Asp	Val	Leu	Ser	Asn	Thr	Lys	Gly	Gln	Met	Ser	Gly	Ile	Leu	Leu
	290					295					300				
Arg	Arg	Leu	Asp	Thr	Gly	Glu	Glu	Thr	Glu	Leu	Glu	Ala	Lys	Gly	Leu
305					310					315					320
Phe	Tyr	Gly	Ile	Gly	His	Ser	Pro	Asn	Ser	Gln	Leu	Leu	Glu	Gly	Gln
				325					330					335	
Val	Glu	Leu	Asp	Ser	Ser	Gly	Tyr	Val	Leu	Val	Arg	Glu	Gly	Thr	Ser
			340					345					350		
Asn	Thr	Ser	Val	Glu	Gly	Val	Phe	Ala	Ala	Gly	Asp	Val	Gln	Asp	His
		355					360					365			
Glu	Trp	Arg	Gln	Ala	Val	Thr	Ala	Ala	Gly	Ser	Gly	Cys	Ile	Ala	Ala
	370					375					380				
Leu	Ser	Ala	Glu	Arg	Tyr	Leu	Thr	Ser	Asn	Asn	Leu	Leu	Val	Glu	Phe
385					390					395					400
His	Gln	Pro	Gln	Thr	Glu	Glu	Ala	Lys	Lys	Glu	Phe	Thr	Gln	Arg	Asp
				405					410					415	
Val	Gln	Glu	Lys	Phe	Asp	Ile	Thr	Leu	Thr	Lys	His	Lys	Gly	Gln	Tyr

			420					425					430			
Ala	Leu	Arg	Lys	Leu	Tyr	His	Glu	Ser	Pro	Arg	Val	Ile	Leu	Val	Leu	
		435					440					445				
Tyr	Thr	Ser	Pro	Thr	Cys	Gly	Pro	Cys	Arg	Thr	Leu	Lys	Pro	Ile	Leu	
		450				455					460					
Asn	Lys	Val	Val	Asp	Glu	Tyr	Asn	His	Asp	Val	His	Phe	Val	Glu	Ile	
465				470					475						480	
Asp	Ile	Glu	Glu	Asp	Gln	Glu	Ile	Ala	Glu	Ala	Ala	Gly	Ile	Met	Gly	
			485					490					495			
Thr	Pro	Cys	Val	Gln	Phe	Phe	Lys	Asn	Lys	Glu	Met	Leu	Arg	Leu	Gly	
			500					505					510			
Asn	Val	Leu	Ser	Val	Leu	Lys	Leu	His	Arg	Leu	Leu	Cys	Ser	Gly	Leu	
		515					520					525				
Ala	Lys	Asp	Ser	Glu	Ser	Val										
	530					535										

<210> 233  
 <211> 117  
 <212> PRT  
 <213> Helianthus annuus

<400> 233

Ala	Val	Val	Glu	Ala	Tyr	Gly	Glu	Glu	Gly	Lys	Asn	Val	Leu	Gly	Gly	
1				5					10					15		
Leu	Lys	Val	Lys	Asn	Val	Val	Ser	Gly	Glu	Val	Ser	Asp	Leu	Lys	Val	
			20					25					30			
Asn	Gly	Leu	Phe	Phe	Ala	Ile	Gly	His	Glu	Pro	Ala	Thr	Lys	Phe	Leu	
		35				40						45				
Asp	Gly	Gln	Leu	Glu	Leu	Asp	Ser	Asp	Gly	Tyr	Val	Val	Thr	Lys	Pro	
50					55						60					
Gly	Thr	Thr	Ile	Ser	Ser	Val	Lys	Gly	Val	Phe	Ala	Ala	Gly	Asp	Val	
65				70						75					80	
Gln	Asp	Lys	Lys	Tyr	Arg	Gln	Ala	Val	Thr	Ala	Ala	Gly	Ser	Gly	Cys	
			85					90					95			
Met	Ala	Ala	Leu	Asp	Ala	Glu	His	Tyr	Leu	Gln	Glu	Ile	Gly	Ser	Gln	
			100					105					110			
Glu	Gly	Lys	Ser	Asp												
		115														

<210> 234  
 <211> 300  
 <212> PRT  
 <213> Arcaeglobus fulgidus

<400> 234

Met	Tyr	Asp	Val	Ala	Ile	Ile	Gly	Gly	Gly	Pro	Ala	Gly	Leu	Thr	Ala	
1				5					10					15		
Ala	Leu	Tyr	Ser	Ala	Arg	Tyr	Gly	Leu	Lys	Thr	Val	Phe	Phe	Glu	Thr	
			20					25					30			
Val	Asp	Pro	Val	Ser	Gln	Leu	Ser	Leu	Ala	Ala	Lys	Ile	Glu	Asn	Tyr	
		35				40						45				
Pro	Gly	Phe	Glu	Gly	Ser	Gly	Met	Glu	Leu	Leu	Glu	Lys	Met	Lys	Glu	
50					55						60					
Gln	Ala	Val	Lys	Ala	Gly	Ala	Glu	Trp	Lys	Leu	Glu	Lys	Val	Glu	Arg	
65				70						75					80	
Val	Glu	Arg	Asn	Gly	Glu	Thr	Phe	Thr	Val	Ile	Ala	Glu	Gly	Gly	Glu	
			85					90					95			
Tyr	Glu	Ala	Lys	Ala	Ile	Ile	Val	Ala	Thr	Gly	Gly	Lys	His	Lys	Glu	
			100					105					110			
Ala	Gly	Ile	Glu	Gly	Glu	Ser	Ala	Phe	Ile	Gly	Arg	Gly	Val	Ser	Tyr	
		115				120						125				
Cys	Ala	Thr	Cys	Asp	Gly	Asn	Phe	Phe	Arg	Gly	Lys	Lys	Val	Ile	Val	
130					135						140					
Tyr	Gly	Ser	Gly	Lys	Glu	Ala	Ile	Glu	Asp	Ala	Ile	Tyr	Leu	His	Asp	
145					150					155					160	

Ile	Gly	Cys	Glu	Val	Thr	Ile	Val	Ser	Arg	Thr	Pro	Ser	Phe	Arg	Ala
				165					170					175	
Glu	Lys	Ala	Leu	Val	Glu	Glu	Val	Glu	Lys	Arg	Gly	Ile	Pro	Val	His
			180					185					190		
Tyr	Ser	Thr	Thr	Ile	Arg	Lys	Ile	Ile	Gly	Ser	Gly	Lys	Val	Glu	Lys
		195					200					205			
Val	Val	Ala	Tyr	Asn	Arg	Glu	Lys	Lys	Glu	Glu	Phe	Glu	Ile	Glu	Ala
		210				215					220				
Asp	Gly	Ile	Phe	Val	Ala	Ile	Gly	Met	Arg	Pro	Ala	Thr	Asp	Val	Val
225					230					235				240	
Ala	Glu	Leu	Gly	Val	Glu	Arg	Asp	Ser	Met	Gly	Tyr	Ile	Lys	Val	Asp
				245					250					255	
Lys	Glu	Gln	Arg	Thr	Asn	Val	Glu	Gly	Val	Phe	Ala	Ala	Gly	Asp	Cys
			260					265					270		
Cys	Asp	Asn	Pro	Leu	Lys	Gln	Val	Val	Thr	Ala	Cys	Gly	Asp	Gly	Ala
		275				280						285			
Val	Ala	Ala	Tyr	Ser	Ala	Tyr	Lys	Tyr	Leu	Thr	Ser				
	290					295					300				

<210> 235

<211> 315

<212> PRT

<213> Bacillus halodurans

<400> 235

Met	Gly	Glu	Glu	Gln	Lys	Val	Tyr	Asp	Val	Val	Ile	Ala	Gly	Ala	Gly
1				5					10					15	
Pro	Ala	Gly	Met	Thr	Ala	Ala	Val	Tyr	Thr	Ser	Arg	Ala	Asn	Leu	Ser
			20					25					30		
Thr	Val	Met	Val	Glu	Arg	Gly	Val	Pro	Gly	Gly	Gln	Met	Ala	Asn	Thr
		35					40					45			
Glu	Asp	Val	Glu	Asn	Tyr	Pro	Gly	Phe	Asp	His	Ile	Leu	Gly	Pro	Glu
	50					55					60				
Leu	Ser	Thr	Lys	Met	Phe	Glu	His	Ala	Lys	Lys	Phe	Gly	Ala	Glu	Tyr
65					70					75				80	
Ala	Tyr	Gly	Asp	Ile	Lys	Glu	Ile	Ile	Asp	Gln	Gly	Asp	Leu	Lys	Leu
				85					90				95		
Val	Lys	Ala	Gly	Asn	Lys	Glu	Tyr	Lys	Ala	Arg	Ala	Val	Ile	Val	Ala
			100					105					110		
Thr	Gly	Ala	Glu	Tyr	Lys	Lys	Leu	Gly	Val	Pro	Gly	Glu	Lys	Glu	Leu
		115					120					125			
Ser	Gly	Arg	Gly	Val	Ser	Tyr	Cys	Ala	Val	Cys	Asp	Gly	Ala	Phe	Phe
	130					135					140				
Lys	Gly	Lys	Glu	Leu	Val	Val	Val	Gly	Gly	Gly	Asp	Ser	Ala	Val	Glu
145					150					155				160	
Glu	Ala	Val	Tyr	Leu	Thr	Arg	Phe	Ala	Ser	Lys	Val	Thr	Ile	Ile	His
				165					170					175	
Arg	Arg	Asp	Gln	Leu	Arg	Ala	Gln	Lys	Ile	Leu	Gln	Gln	Arg	Ala	Phe
			180					185					190		
Asp	Asn	Asp	Lys	Ile	Glu	Phe	Ile	Trp	Asp	His	Val	Val	Lys	Gln	Ile
		195					200					205			
Asn	Gly	Thr	Asp	Gly	Lys	Val	Ser	Ser	Val	Thr	Ile	Glu	His	Ala	Lys
	210					215					220				
Thr	Gly	Glu	Gln	Gln	Asp	Phe	Lys	Thr	Asp	Gly	Val	Phe	Ile	Tyr	Ile
225					230					235				240	
Gly	Met	Leu	Pro	Leu	Asn	Glu	Ala	Val	Lys	Asn	Leu	Asn	Ile	Leu	Asn
				245					250					255	
Asp	Glu	Gly	Tyr	Ile	Val	Thr	Asn	Glu	Met	Glu	Thr	Ser	Val	Pro	
			260				265					270			
Gly	Ile	Phe	Ala	Ala	Gly	Asp	Val	Arg	Glu	Lys	Ser	Leu	Arg	Gln	Ile
		275					280					285			
Val	Thr	Ala	Thr	Gly	Asp	Gly	Ser	Leu	Ala	Ala	Gln	Asn	Val	Gln	His
	290					295					300				
Tyr	Ile	Glu	Glu	Leu	Ala	Glu	Lys	Val	Lys	Asn					
305					310					315					

<210> 236  
 <211> 330  
 <212> PRT  
 <213> Bacillus halodurans

<400> 236  
 Met Ser Arg Lys Glu Glu Leu Tyr Asp Ile Thr Ile Ile Gly Gly Gly  
 1 5 10 15  
 Pro Thr Gly Leu Phe Ala Ala Phe Tyr Gly Gly Met Arg Gln Ala Lys  
 20 25 30  
 Val Lys Ile Ile Glu Ser Met Pro Gln Leu Gly Gly Gln Leu Ala Ala  
 35 40 45  
 Leu Tyr Pro Glu Lys Tyr Ile Tyr Asp Val Ala Gly Phe Pro Lys Val  
 50 55 60  
 Lys Ala Gln Asp Leu Val Asn Asp Leu Lys Arg Gln Ala Glu Gln Phe  
 65 70 75 80  
 Asn Pro Thr Ile Ala Leu Glu Gln Ser Val Gln Asn Val Thr Lys Glu  
 85 90 95  
 Thr Asp Asp Thr Phe Thr Ile Lys Thr Asp Lys Glu Thr His Tyr Ser  
 100 105 110  
 Lys Ala Ile Ile Ile Thr Ala Gly Ala Phe Gln Pro Arg Arg  
 115 120 125  
 Leu Glu Val Glu Gly Ala Lys Gln Tyr Glu Gly Lys Asn Leu Gln Tyr  
 130 135 140  
 Phe Val Asn Asp Leu Asn Ala Tyr Ala Gly Lys Asn Val Leu Ile Ser  
 145 150 155 160  
 Gly Gly Gly Asp Ser Ala Val Asp Trp Ala Leu Met Leu Glu Pro Val  
 165 170 175  
 Ala Lys Asn Val Thr Leu Ile His Arg Arg Asp Lys Phe Arg Ala His  
 180 185 190  
 Glu His Ser Val Glu Leu Leu Gln Lys Ser Ser Val Asn Ile Leu Thr  
 195 200 205  
 Pro Phe Ala Ile Ser Glu Leu Ser Gly Asp Gly Glu Lys Ile His His  
 210 215 220  
 Val Thr Ile Gln Glu Val Lys Gly Asp Ala Val Glu Thr Leu Asp Val  
 225 230 235 240  
 Asp Glu Val Ile Val Asn Phe Gly Phe Val Ser Ser Leu Gly Pro Ile  
 245 250 255  
 Lys Gly Trp Gly Leu Glu Ile Glu Lys Asn Ser Ile Val Val Asn Thr  
 260 265 270  
 Lys Met Glu Thr Asn Ile Pro Gly Ile Tyr Ala Ala Gly Asp Ile Cys  
 275 280 285  
 Thr Tyr Pro Gly Lys Val Lys Leu Ile Ala Thr Gly Phe Gly Glu Ala  
 290 295 300  
 Pro Thr Ala Val Asn Asn Ala Lys Ala Phe Ile Asp Pro Thr Ala Arg  
 305 310 315 320  
 Val Phe Pro Gly His Ser Thr Ser Leu Phe  
 325 330

<210> 237  
 <211> 213  
 <212> PRT  
 <213> Bacillus halodurans

<400> 237  
 Met Thr Asn Leu His Tyr Thr Val Lys Ser Leu Met Arg Phe Lys Asp  
 1 5 10 15  
 Lys Thr Val Ile Ile Ser Gly Gly Gly Asn Ser Ala Ile Asp Trp Ala  
 20 25 30  
 Asn Glu Leu Glu Pro Ile Ala Lys Lys Val Tyr Leu Thr Tyr Arg Lys  
 35 40 45  
 Glu Ala Leu Asn Gly His Glu Ala Gln Ile Ser Gln Leu Leu Ser Ser  
 50 55 60  
 Ser Ala Thr Cys Leu Phe His Thr Thr Ile Ser Lys Leu Ile Ala Arg  
 65 70 75 80  
 Asp Asn Lys Glu Val Ile Glu Gln Val Glu Leu Thr Asp His Gln Thr

85 90 95  
 Gly Glu Val Thr Asn Leu Ala Val Asp Glu Val Ile Ile Asn His Gly  
 100 105 110  
 Tyr Glu Arg Asp Lys Ser Leu Leu Asp Gln Ser Glu Val Thr Leu Asp  
 115 120 125  
 Arg Ile Asp Asp Tyr Tyr Ile Ala Gly Thr Pro Thr Ser Ala Thr Ser  
 130 135 140  
 Val Gly Gly Ile Tyr Ala Ala Gly Asp Val Leu Lys His Glu Gly Lys  
 145 150 155 160  
 Leu His Leu Ile Ala Gly Ala Phe Gln Asp Ala Ala Asn Ala Val Asn  
 165 170 175  
 Gln Ala Lys Gln Trp Ile Glu Pro Glu Ala His Gln Ser Ala Met Val  
 180 185 190  
 Ser Ser His Asn His Val Phe Lys Glu Arg Asn Arg Glu Leu Ile Arg  
 195 200 205  
 Gln Met Leu Lys Asn  
 210

<210> 238  
 <211> 136  
 <212> PRT  
 <213> *Bacillus halodurans*

<400> 238  
 Met Asn Trp Glu Glu Leu Tyr Asp Val Thr Ile Ile Gly Gly Gly Pro  
 1 5 10 15  
 Ala Gly Leu Phe Ser Ala Phe Tyr Ser Gly Leu Arg Glu Met Lys Thr  
 20 25 30  
 Lys Val Ile Glu Tyr Gln Pro Met Leu Gly Gly Lys Val His Val Tyr  
 35 40 45  
 Pro Glu Lys Met Ile Trp Asp Val Gly Gly Leu Thr Pro Ile Leu Gly  
 50 55 60  
 Glu Lys Leu Ile Glu Gln Leu Val Thr Gln Ala Leu Thr Phe Asn Pro  
 65 70 75 80  
 Thr Val Val Leu Asn Glu Lys Val Thr Ser Ile Ala Gln Glu Glu Ser  
 85 90 95  
 Gly Trp Phe Val Ile Arg Thr Ala Ser Gly Arg Ala His Leu Thr Lys  
 100 105 110  
 Thr Val Ile Ile Ala Val Gly Gly Gly Ile Leu Lys Pro Gln Lys Asn  
 115 120 125  
 Arg Ala Arg Arg Gly Arg Thr Ile  
 130 135

<210> 239  
 <211> 312  
 <212> PRT  
 <213> *Campylobacter jejuni*

<400> 239  
 Met Leu Asp Val Ala Ile Ile Gly Gly Gly Pro Ala Gly Leu Ser Ala  
 1 5 10 15  
 Gly Leu Tyr Ala Thr Arg Gly Gly Leu Lys Asn Val Val Met Phe Glu  
 20 25 30  
 Lys Gly Met Pro Gly Gly Gln Ile Thr Ser Ser Ser Glu Ile Glu Asn  
 35 40 45  
 Tyr Pro Gly Val Ala Gln Val Met Asp Gly Ile Ser Phe Met Ala Pro  
 50 55 60  
 Trp Ser Glu Gln Cys Met Arg Phe Gly Leu Lys His Glu Met Val Gly  
 65 70 75 80  
 Val Glu Gln Ile Leu Lys Asn Ser Asp Gly Ser Phe Thr Ile Lys Leu  
 85 90 95  
 Glu Gly Gly Lys Thr Glu Leu Ala Lys Ala Val Ile Val Cys Thr Gly  
 100 105 110  
 Ser Ala Pro Lys Lys Ala Gly Phe Lys Gly Glu Asp Glu Phe Phe Gly  
 115 120 125



Lys	Gly	Val	Ser	Thr	Cys	Ala	Thr	Cys	Asp	Gly	Phe	Phe	Tyr	Lys	Asn
130						135					140				
Lys	Glu	Val	Ala	Val	Leu	Gly	Gly	Gly	Asp	Thr	Ala	Leu	Glu	Glu	Ala
145					150				155						160
Leu	Tyr	Leu	Ala	Asn	Ile	Cys	Ser	Lys	Ile	Tyr	Leu	Ile	His	Arg	Arg
				165					170					175	
Asp	Glu	Phe	Arg	Ala	Ala	Pro	Ser	Thr	Val	Glu	Lys	Val	Lys	Lys	Asn
			180					185					190		
Glu	Lys	Ile	Glu	Leu	Ile	Thr	Ser	Ala	Ser	Val	Asp	Glu	Val	Tyr	Gly
		195					200					205			
Asp	Lys	Met	Gly	Val	Ala	Gly	Val	Lys	Val	Lys	Leu	Lys	Asp	Gly	Ser
		210				215					220				
Ile	Arg	Asp	Leu	Asn	Val	Pro	Gly	Ile	Phe	Thr	Phe	Val	Gly	Leu	Asn
225					230				235						240
Val	Arg	Asn	Glu	Ile	Leu	Lys	Gln	Asp	Asp	Ser	Lys	Phe	Leu	Cys	Asn
				245				250						255	
Met	Glu	Glu	Gly	Gly	Gln	Val	Ser	Val	Asp	Leu	Lys	Met	Gln	Thr	Ser
			260					265					270		
Val	Ala	Gly	Leu	Phe	Ala	Ala	Gly	Asp	Leu	Arg	Lys	Asp	Ala	Pro	Lys
		275					280					285			
Gln	Val	Ile	Cys	Ala	Ala	Gly	Asp	Gly	Ala	Val	Ala	Ala	Leu	Ser	Ala
		290				295					300				
Met	Ala	Tyr	Ile	Glu	Ser	Leu	His								
305					310										

<210> 240  
 <211> 348  
 <212> PRT  
 <213> *Caulobacter crescentus*

<400> 240

Met	Ser	Pro	Leu	Arg	Arg	Ile	His	Thr	Ile	Ser	Pro	Pro	Met	Ser	Thr
1				5					10					15	
Leu	Ser	Pro	Arg	Gln	Thr	Arg	Cys	Leu	Ile	Ile	Gly	Ser	Gly	Pro	Ala
			20					25					30		
Gly	Tyr	Thr	Ala	Ala	Ile	Tyr	Ala	Ala	Arg	Ala	Leu	Leu	Lys	Pro	Val
		35					40					45			
Leu	Ile	Ala	Gly	Ile	Gln	Pro	Gly	Gly	Gln	Leu	Thr	Ile	Thr	Thr	Asp
		50			55						60				
Val	Glu	Asn	Tyr	Pro	Gly	Phe	Ala	Asp	Val	Ile	Gln	Gly	Pro	Trp	Leu
65					70				75					80	
Met	Asp	Gln	Met	Arg	Ala	Gln	Ala	Glu	His	Val	Gly	Thr	Glu	Phe	Val
			85					90					95		
Ser	Asp	Ile	Val	Thr	Ser	Val	Asp	Leu	Ser	Lys	Arg	Pro	Phe	Thr	Val
			100					105					110		
Lys	Thr	Asp	Ser	Gly	Gln	Asp	Trp	Ile	Ala	Glu	Thr	Ile	Ile	Ile	Ala
		115					120					125			
Thr	Gly	Ala	Gln	Ala	Lys	Trp	Leu	Gly	Leu	Glu	Ser	Glu	Ala	Lys	Phe
		130				135					140				
Gln	Gly	Phe	Gly	Val	Ser	Ala	Cys	Ala	Thr	Cys	Asp	Gly	Phe	Phe	Tyr
145					150					155					160
Arg	Asn	Lys	Asp	Val	Ile	Val	Val	Gly	Gly	Gly	Asn	Thr	Ala	Val	Glu
				165				170						175	
Glu	Ala	Leu	Phe	Leu	Thr	Ser	Phe	Ala	Ser	Lys	Val	Thr	Leu	Val	His
			180					185					190		
Arg	Lys	Asp	Glu	Leu	Arg	Ala	Glu	Lys	Ile	Leu	Gln	Glu	Arg	Leu	Leu
		195					200					205			
Ala	His	Pro	Lys	Ile	Glu	Val	Ile	Trp	Asp	Ser	Val	Ile	Asp	Glu	Val
		210				215					220				
Leu	Gly	Gln	Thr	Asp	Pro	Met	Gly	Val	Thr	Gly	Ala	Arg	Leu	Lys	Asn
225					230					235					240
Val	Lys	Thr	Gly	Glu	Thr	Gln	Glu	Val	Ala	Ala	Asp	Gly	Val	Phe	Ile
				245					250					255	
Ala	Ile	Gly	His	Ala	Pro	Ser	Ser	Glu	Leu	Phe	Ala	Gly	Gln	Leu	Glu
			260					265					270		
Thr	Gly	Ser	Gly	Gly	Tyr	Leu	Lys	Val	Lys	Pro	Gly	Thr	Ala	Ser	Thr



Asn Tyr Leu Gly Ile Tyr Asp Val Ser Gly Lys Glu Leu Lys Glu Lys  
 50 55 60  
 Phe Leu Glu His Leu Lys Tyr Met Asn Ile Glu Ile Lys Asn Glu Lys  
 65 70 75 80  
 Val Asn Ser Val Tyr Ser Met Gly Asp Tyr Phe Ala Leu Ser Leu Asn  
 85 90 95  
 Gln Lys Met Tyr Glu Ala Thr Ser Ile Ile Ile Ala Ser Gly Val Glu  
 100 105 110  
 Phe Ser Lys Pro Leu Asn Gly Glu Asp Glu Leu Leu Gly Lys Gly Val  
 115 120 125  
 Gly Tyr Cys Ala Thr Cys Asp Ala Pro Leu Tyr Lys Gly Lys Thr Val  
 130 135 140  
 Ala Ile Val Gly Tyr Thr Lys Glu Ala Glu Glu Glu Ala Asn Tyr Val  
 145 150 155 160  
 Ser Glu Leu Ala Gly Lys Leu Tyr Tyr Ile Pro Met Tyr Lys Asp Lys  
 165 170 175  
 Val Ser Leu Lys Glu Val Ile Glu Val Val Glu Asp Lys Pro Ile Ser  
 180 185 190  
 Ile Leu Gly Lys Asp Lys Val Ser Gly Leu Gln Met Ser Lys Gly Glu  
 195 200 205  
 Ile Asn Thr Asp Ala Val Phe Ile Ile Lys Asp Ser Val Ser Pro Gly  
 210 215 220  
 Lys Leu Val Pro Gly Leu Leu Met Asn Gly Glu His Ile Ala Val Asp  
 225 230 235 240  
 Ile Asp Met Lys Thr Asn Ile Glu Gly Cys Phe Ala Ala Gly Asp Cys  
 245 250 255  
 Ala Gly Arg Pro Tyr Gln Tyr Ile Lys Ser Ala Gly Gln Gly Gln Ile  
 260 265 270  
 Ala Ala Leu Ser Ala Val Ser Tyr Ile Asp Lys Ile Lys Leu Asn Lys  
 275 280 285  
 Lys Ile Ile  
 290

<210> 243  
 <211> 314  
 <212> PRT  
 <213> Clostridium sticklandii

<400> 243  
 Met Ser Lys Ile Tyr Asp Leu Val Ile Ile Gly Ala Gly Pro Ala Gly  
 1 5 10 15  
 Leu Ser Ala Gly Leu Tyr Gly Ala Arg Gly Lys Met Ser Thr Leu Ile  
 20 25 30  
 Ile Glu Lys Asp Lys Thr Gly Gly Gln Ile Val Thr Thr Glu Glu Val  
 35 40 45  
 Ala Asn Tyr Pro Gly Ser Ile His Asp Ala Ser Gly Pro Ser Leu Ile  
 50 55 60  
 Ala Arg Met Ala Glu Gln Ala Asp Glu Phe Gly Thr Glu Arg Ile Lys  
 65 70 75 80  
 Asp Ser Ile Val Asp Phe Asp Phe Thr Gly Lys Ile Lys Ile Leu Lys  
 85 90 95  
 Gly Thr Lys Ala Glu Tyr Gln Ala Lys Ala Val Ile Val Ala Thr Gly  
 100 105 110  
 Ala Ser Pro Lys Lys Leu Asp Cys Pro Gly Glu Lys Glu Leu Thr Gly  
 115 120 125  
 Lys Gly Val Ser Tyr Cys Ala Thr Cys Asp Ala Asp Phe Phe Gln Asp  
 130 135 140  
 Met Glu Val Phe Val Val Gly Gly Gly Asp Ser Ala Val Glu Glu Ala  
 145 150 155 160  
 Met Tyr Leu Thr Lys Phe Ala Ser Lys Val Thr Ile Val His Arg Arg  
 165 170 175  
 Asp Ser Leu Arg Ala Ala Lys Ser Ile Gln Asp Lys Ala Phe Ala Asn  
 180 185 190  
 Pro Lys Ile Asp Phe Lys Trp Asp Ser Val Ile Lys Glu Ile Lys Gly  
 195 200 205  
 Asp Gly Ile Val Glu Ser Val Val Phe Glu Asn Thr Lys Thr Gly Glu

210	215	220
Leu Ser Glu His Phe Ala Asp Glu Glu Phe Gly Thr Phe Gly Ile Phe		
225	230	235
Val Phe Thr Gly Tyr Ile Pro Gln Thr Asp Ile Phe Lys Asp Lys Val		
	245	250
Asp Met Asn Gln Ser Gly Tyr Phe Val Thr Asn Gln Asn Met Glu Thr		
	260	265
Asn Ile Pro Gly Val Phe Ala Ala Gly Asp Cys Arg Glu Lys Val Leu		
	275	280
Arg Gln Val Val Thr Ala Thr Ala Asp Gly Ala Ile Ala Ala Ile Met		
	290	295
Ala Glu Lys Tyr Ile Glu His Glu Gly Leu		300
305	310	

<210> 244

<211> 325

<212> PRT

<213> Deinococcus radiodurans

<400> 244

Met Thr Ala Pro Thr Ala His Asp Tyr Asp Val Val Ile Ile Gly Gly	
1 5 10 15	
Gly Pro Ala Gly Leu Thr Ala Ala Ile Tyr Thr Gly Arg Ala Gln Leu	
20 25 30	
Ser Thr Leu Ile Leu Glu Lys Gly Met Pro Gly Gly Gln Ile Ala Trp	
35 40 45	
Ser Glu Glu Val Glu Asn Phe Pro Gly Phe Pro Glu Pro Ile Ala Gly	
50 55 60	
Met Glu Leu Ala Gln Arg Met His Gln Gln Ala Glu Lys Phe Gly Ala	
65 70 75 80	
Lys Val Glu Met Asp Glu Val Gln Gly Val Gln His Asp Ala Thr Ser	
85 90 95	
His Pro Tyr Pro Phe Thr Val Arg Gly Tyr Asn Gly Glu Tyr Arg Ala	
100 105 110	
Lys Ala Val Ile Leu Ala Thr Gly Ala Asp Pro Arg Lys Leu Gly Ile	
115 120 125	
Pro Gly Glu Asp Asn Phe Trp Gly Lys Gly Val Ser Thr Cys Ala Thr	
130 135 140	
Cys Asp Gly Phe Phe Tyr Lys Gly Lys Lys Val Val Val Ile Gly Gly	
145 150 155 160	
Gly Asp Ala Ala Val Glu Glu Gly Met Phe Leu Thr Lys Phe Ala Asp	
165 170 175	
Glu Val Thr Val Ile His Arg Arg Asp Thr Leu Arg Ala Asn Lys Val	
180 185 190	
Ala Gln Ala Arg Ala Phe Ala Asn Pro Lys Met Lys Phe Ile Trp Asp	
195 200 205	
Thr Ala Val Glu Glu Ile Gln Gly Ala Asp Ser Val Ser Gly Val Lys	
210 215 220	
Leu Arg Asn Leu Lys Thr Gly Glu Val Ser Glu Leu Ala Thr Asp Gly	
225 230 235 240	
Val Phe Ile Phe Ile Gly His Val Pro Asn Thr Ala Phe Val Lys Asp	
245 250 255	
Thr Val Ser Leu Arg Asp Asp Gly Tyr Val Asp Val Arg Asp Glu Ile	
260 265 270	
Tyr Thr Asn Ile Pro Met Leu Phe Ala Ala Gly Asp Val Ser Asp Tyr	
275 280 285	
Ile Tyr Arg Gln Leu Ala Thr Ser Val Gly Ala Gly Thr Arg Ala Ala	
290 295 300	
Met Met Thr Glu Arg Gln Leu Ala Ala Leu Glu Val Glu Gly Glu Glu	
305 310 315 320	
Val Thr Ala Ala Asp	
325	

<210> 245

<211> 61

<212> PRT  
 <213> Enterococcus faecalis

<220>  
 <221> VARIANT  
 <222> 33, 45, 46  
 <223> Xaa = Any Amino Acid

<400> 245  
 Met Met Asp Thr Leu Ile Ile Glu Lys Asp Lys Ile Gly Gly Gln Val  
 1 5 10 15  
 Thr Thr Thr Ser Glu Ile Val Asn Tyr Pro Ala Ile Arg His Thr Thr  
 20 25 30  
 Xaa Pro Glu Leu Met Gly Glu Met Arg Ile Gln Ala Xaa Xaa Phe Gly  
 35 40 45  
 Val Ala Phe Thr Lys Asp Glu Ile Ile Asp Val Asp Phe  
 50 55 60

<210> 246  
 <211> 205  
 <212> PRT  
 <213> Halobacterium sp

<400> 246  
 Met Thr Glu Asp Ser His Asp Leu Val Ile Ala Gly Ser Gly Ile Ala  
 1 5 10 15  
 Gly Leu Ser Ala Val Tyr Ala Ala Arg Ala Asp Leu Glu Pro Leu  
 20 25 30  
 Val Leu Glu Gly Asp Glu Pro Gly Gly Gln Leu Thr Leu Thr Thr Asp  
 35 40 45  
 Val Glu Asn Tyr Leu Gly Phe Pro Asp Gly Val Gly Met Asp Leu  
 50 55 60  
 Val Gln Arg Gly Lys Glu Gln Ala Glu Gln Phe Gly Ala Gln Phe Glu  
 65 70 75 80  
 His Gly Arg Ile Glu Ala Ala Asp Leu Asp Gly Gln Pro Leu Glu Leu  
 85 90 95  
 Ser Leu Ser Thr Gly Asp Thr Leu Tyr Thr Arg Ser Leu Ile Val Ala  
 100 105 110  
 Thr Gly Ala Ser Ala Arg Trp Val Gly Ala Glu Asn Glu Asp Glu Leu  
 115 120 125  
 Met Gly Ala Gly Leu Ser Thr Cys Ala Thr Cys Asp Gly Ala Phe His  
 130 135 140  
 Arg Gly Asp Asp Val Leu Val Val Gly Gly Gly Asp Ser Ala Met Glu  
 145 150 155 160  
 Glu Ala Leu Phe Leu Ala Lys Phe Ala Asp Ser Val Thr Val Val His  
 165 170 175  
 Arg Arg Glu Glu Leu Arg Ala Ser Glu Ile Met Ala Asp Arg Ala Arg  
 180 185 190  
 Asp His Asp Asp Val Gln Phe Arg Trp Asn Thr Glu Leu  
 195 200 205

<210> 247  
 <211> 362  
 <212> PRT  
 <213> Halobacterium sp

<400> 247  
 Met Thr Glu Ala Thr Ala Asp Arg Thr Ala Leu Thr Asp Gly Gly Arg  
 1 5 10 15  
 Asp Val Val Glu His Arg Gln Leu Val Ile Val Gly Ser Gly Ile Ala  
 20 25 30  
 Ala Leu Ser Ala Ala Thr Tyr Ala Ala Arg Ser Asn Asn Asp Pro Leu  
 35 40 45  
 Leu Phe Glu Gly Asp Glu Pro Gly Gly Gln Leu Thr Leu Thr Ser Glu  
 50 55 60

Val	Glu	Asn	Tyr	Pro	Gly	Phe	Pro	Glu	Gly	Ile	Ala	Gly	Ala	Glu	Leu
65					70					75				80	
Ile	Gln	Glu	Met	Lys	Thr	Gln	Ala	Thr	Arg	Phe	Gly	Ala	Glu	Val	Glu
				85					90					95	
His	Gly	Ile	Val	Glu	Ser	Val	Asp	Asp	Ser	Gly	Arg	Pro	Phe	Arg	Leu
			100					105					110		
Thr	Leu	Thr	Asn	Gly	Asp	Val	Tyr	Thr	Ala	Asp	Ala	Val	Ile	Val	Ala
		115					120					125			
Ser	Gly	Ala	Ser	Ala	Arg	Thr	Leu	Gly	Ile	Pro	Gly	Glu	Asp	Glu	Leu
	130					135					140				
Met	Gly	Gln	Gly	Val	Ser	Thr	Cys	Ala	Thr	Cys	Asp	Gly	Ala	Phe	Phe
145					150					155				160	
Arg	Gly	Glu	Asp	Met	Ile	Val	Val	Gly	Gly	Asp	Ala	Ala	Ala	Ala	Glu
				165				170					175		
Glu	Ala	Ser	Phe	Leu	Thr	Lys	Phe	Ala	Asp	Thr	Val	Tyr	Leu	Val	His
			180					185					190		
Arg	Arg	Asp	Glu	Leu	Arg	Ala	Glu	Asp	Tyr	Trp	Ala	Asp	Arg	Ile	Arg
		195					200					205			
Glu	His	Val	Ala	Asp	Gly	Asp	Ile	Glu	Val	Leu	Trp	Asn	Thr	Glu	Ala
	210					215					220				
Val	Glu	Val	His	Gly	Ser	Pro	Glu	Glu	Gly	Val	Thr	Gly	Ala	Ser	Leu
225					230					235				240	
Val	Arg	His	Pro	Glu	Gly	His	Pro	Thr	Ala	Lys	Leu	Asp	Ala	Asp	Glu
				245					250					255	
Thr	Glu	Gln	Leu	Glu	Leu	Asp	Ile	Gly	Ala	Phe	Phe	Ile	Ala	Ile	Gly
			260					265					270		
His	Thr	Pro	Asn	Thr	Ser	Phe	Leu	Ala	Asp	Thr	Gly	Val	Val	Cys	Asp
		275					280					285			
Asp	Ala	Gly	Tyr	Val	Gln	Thr	Val	Gly	Gly	Ala	Gly	Gly	Gly	Gln	Thr
	290					295				300					
Lys	Thr	Asp	Val	Thr	Gly	Val	Phe	Gly	Ala	Gly	Asp	Val	Val	Asp	Tyr
305					310					315				320	
His	Tyr	Gln	Gln	Ala	Val	Thr	Ala	Ala	Gly	Met	Gly	Ser	Lys	Ala	Ala
				325					330					335	
Ile	Asp	Ala	Asp	Glu	Tyr	Leu	Glu	Ser	Val	Ala	Asp	Gly	Val	Thr	Gly
			340					345					350		
Glu	Thr	Ala	Asp	Ala	Thr	Pro	Ala	Asp	Asp						
		355					360								

<210> 248

<211> 294

<212> PRT

<213> Halobacterium

<400> 248

Met	Pro	Thr	Gln	Asp	Gly	Glu	Arg	Arg	Asp	Val	Val	Ile	Val	Gly	Gly
1				5					10					15	
Gly	Pro	Ala	Gly	Cys	Ala	Ala	Gly	Val	Phe	Thr	Ala	Arg	Tyr	Gly	Leu
			20					25					30		
Asp	Thr	Val	Val	Phe	Asp	Arg	Gly	Asn	Ala	Ala	Leu	Pro	Arg	Cys	Ala
		35					40					45			
Phe	Val	Glu	Asn	Tyr	Pro	Gly	Phe	Pro	Gly	Gly	Ile	Asp	Val	Pro	Thr
	50					55					60				
Leu	Arg	Gly	Leu	Phe	His	Asp	His	Ala	Glu	Thr	Ala	Gly	Cys	Asp	Leu
65					70					75				80	
Ile	Ala	Asp	Thr	Val	Glu	Ser	Val	Asp	Arg	Pro	Ser	Asp	Asp	Asp	Thr
				85					90					95	
Gly	Phe	Val	Val	Glu	Thr	Gln	Asp	Gly	Arg	Arg	Val	Tyr	Thr	Asp	Thr
			100					105					110		
Val	Leu	Ala	Ala	Ala	Trp	Tyr	Asp	Gly	Ser	Tyr	Leu	Arg	Pro	Val	Val
		115					120					125			
Gly	Asp	Ser	Ala	Phe	Glu	Thr	His	Asp	His	His	Gly	Glu	Ser	Arg	Glu
	130					135					140				
Arg	Phe	Asp	Asp	Ala	Tyr	Ala	Asp	Ala	Asp	Gly	Arg	Thr	Pro	Val	Asp
145					150					155				160	
Gly	Leu	Tyr	Val	Ala	Ser	Pro	Gly	Gly	Gln	Arg	Ser	Ala	Gln	Ala	Val

Ile	Ala	Ala	Gly	165	Asn	Gly	Ala	His	Val	170	Ala	Arg	Cys	Leu	Leu	175	Ala	Asp
Arg	Lys	Arg	Ala	180	Arg	Gly	Tyr	Pro	185	Glu	Gly	Val	Ala	Pro	190	His	Tyr	Asp
Trp	Lys	Arg	Arg	195	Glu	Ser	Asp	Leu	200	Ser	Gly	Glu	Trp	Ala	205	Asp	Arg	Asp
Arg	Trp	Arg	Glu	210	Trp	Phe	Ala	Ala	215	Glu	Ala	Gly	Asp	Asp	His	Asp	Leu	
225	Asp	Asp	Asp	230	Glu	Phe	Ala	Ala	235	Leu	Arg	Ala	Ala	His	Leu	Asp	Arg	Thr
Asp	Asp	Asp	Glu	245	Phe	Ala	Ala	Leu	250	Ala	Ala	His	Leu	Asp	Arg	Thr		
Phe	Asp	Ala	Thr	260	Leu	Ser	Ala	Asp	265	Ala	Ile	Glu	Glu	Arg	Ala	Glu	Ala	
Gly	Ala	His	Arg	275	Leu	Leu	Asp	His	280	Ile	Asp	Asp	Asp	His	285	Ile	Glu	Ser
Tyr	Arg	Glu	Gln	290	Arg	Asp												

<210> 249

<211> 324

<212> PRT

<213> Helicobacter pylori

<400> 249

Met	Asn	Gln	Glu	Ile	Leu	Asp	Val	Leu	Ile	Val	Gly	Ala	Gly	Pro	Gly			
1				5				10						15				
Gly	Ile	Ala	Thr	Ala	Val	Glu	Cys	Glu	Ile	Ala	Gly	Val	Lys	Lys	Val			
			20					25					30					
Leu	Leu	Cys	Glu	Lys	Thr	Glu	Ser	His	Ser	Gly	Met	Leu	Glu	Lys	Phe			
		35					40					45						
Tyr	Lys	Ala	Gly	Lys	Arg	Ile	Asp	Lys	Asp	Tyr	Lys	Lys	Gln	Val	Val			
	50					55				60								
Glu	Leu	Lys	Gly	His	Ile	Pro	Phe	Lys	Asp	Ser	Phe	Lys	Glu	Glu	Thr			
65				70				75						80				
Leu	Glu	Asn	Phe	Thr	Asn	Leu	Leu	Lys	Glu	His	His	Ile	Thr	Pro	Ser			
			85					90						95				
Tyr	Lys	Thr	Asp	Ile	Glu	Ser	Val	Lys	Lys	Glu	Gly	Glu	Tyr	Phe	Lys			
			100					105					110					
Ile	Thr	Thr	Thr	Ser	Asn	Thr	Thr	Tyr	His	Ala	Lys	Phe	Val	Val	Val			
			115					120				125						
Ala	Ile	Gly	Lys	Met	Gly	Gln	Pro	Asn	Arg	Pro	Thr	Ala	Tyr	Lys	Ile			
			130					135				140						
Pro	Val	Ala	Leu	Ser	Lys	Gln	Val	Val	Phe	Ser	Ile	Asn	Asp	Cys	Lys			
145					150				155					160				
Glu	Asn	Glu	Lys	Thr	Leu	Val	Ile	Gly	Gly	Asn	Ser	Ala	Val	Glu				
				165				170						175				
Tyr	Ala	Ile	Ala	Leu	Cys	Lys	Thr	Thr	Pro	Thr	Thr	Leu	Asn	Tyr	Arg			
			180					185					190					
Lys	Lys	Glu	Phe	Ser	Arg	Ile	Asn	Glu	Asp	Asn	Ala	Lys	Asn	Leu	Gln			
			195					200				205						
Glu	Val	Leu	Asn	Asn	Asn	Thr	Leu	Lys	Ser	Lys	Leu	Gly	Val	Asp	Ile			
			210				215					220						
Glu	Ser	Leu	Glu	Glu	Asp	Asn	Thr	Gln	Ile	Lys	Val	Asn	Phe	Thr	Asp			
225					230					235				240				
Asn	Thr	Ser	Glu	Ser	Phe	Asp	Arg	Leu	Leu	Tyr	Ala	Ile	Gly	Gly	Ser			
				245					250				255					
Thr	Pro	Leu	Glu	Phe	Phe	Lys	Arg	Cys	Ser	Leu	Glu	Leu	Asp	Pro	Ser			
			260					265					270					
Thr	Asn	Ile	Pro	Val	Val	Lys	Glu	Asn	Leu	Glu	Ser	Asn	Asn	Ile	Pro			
			275				280					285						
Asn	Leu	Phe	Ile	Val	Gly	Asp	Ile	Leu	Phe	Lys	Ser	Gly	Ala	Ser	Ile			
			290				295				300							
Ala	Thr	Ala	Leu	Asn	His	Gly	Tyr	Asp	Val	Ala	Ile	Glu	Ile	Ala	Lys			
305					310					315					320			
Arg	Leu	His	Ser															

<210> 250  
 <211> 128  
 <212> PRT  
 <213> Klebsiella oxytoca

<400> 250  
 Met Gly Thr Ala Lys His Ser Lys Leu Leu Ile Leu Gly Ser Gly Pro  
 1 5 10 15  
 Ala Gly Tyr Thr Ala Ala Val Tyr Ala Ala Arg Ala Asn Leu Gln Pro  
 20 25 30  
 Val Leu Ile Thr Gly Met Glu Lys Gly Gly Gln Leu Thr Thr Thr  
 35 40 45  
 Glu Val Glu Asn Trp Pro Gly Asp Pro Asn Asp Leu Thr Gly Pro Leu  
 50 55 60  
 Leu Met Glu Arg Met His Glu His Ala Thr Lys Phe Glu Thr Glu Ile  
 65 70 75 80  
 Ile Phe Asp His Ile Asn Ser Val Asp Leu Gln Asn Arg Pro Phe Arg  
 85 90 95  
 Leu Val Gly Asp Ser Gly Glu Tyr Thr Cys Asp Ala Pro Asp Tyr Arg  
 100 105 110  
 Tyr Arg Arg Ile Ser Ala Leu Ser Gly Ser Ala Ile Gly Arg Arg Val  
 115 120 125

<210> 251  
 <211> 79  
 <212> PRT  
 <213> Lactococcus lactis

<400> 251  
 Met Gln Glu Leu Asp Leu Ile Ile Val Gly Ala Gly Pro Val Gly Leu  
 1 5 10 15  
 Tyr Ala Ala Phe Tyr Ala Gly Met Arg Gly Leu Ser Val Ala Ile Ile  
 20 25 30  
 Glu Ser Ala Gln Val Pro Gly Gly Gln Pro Gln Asn Leu Tyr Pro Glu  
 35 40 45  
 Lys Leu Ile Tyr Asp Ile Ala Gly Leu Pro Ala Val Thr Gly Ala Asp  
 50 55 60  
 Leu Thr Lys Asn Leu Leu Glu Gln Leu Ala Gln Ile Ser His Arg  
 65 70 75

<210> 252  
 <211> 321  
 <212> PRT  
 <213> Lactococcus lactis

<400> 252  
 Met Gln Glu Leu Asp Leu Ile Ile Val Gly Ala Gly Pro Val Gly Leu  
 1 5 10 15  
 Tyr Ala Ala Phe Tyr Ala Gly Met Arg Gly Leu Ser Val Ala Ile Ile  
 20 25 30  
 Glu Ser Ala Gln Val Pro Gly Gly Gln Pro Gln Asn Leu Tyr Pro Glu  
 35 40 45  
 Lys Leu Ile Tyr Asp Ile Ala Gly Leu Pro Ala Val Thr Gly Ala Asp  
 50 55 60  
 Leu Thr Lys Asn Leu Leu Glu Gln Leu Ala Gln Ile Ser His Arg Leu  
 65 70 75 80  
 Phe Leu Gly Glu Ser Val Gln Lys Ile Glu Lys Glu Glu Gly Ile Phe  
 85 90 95  
 Ser Val Thr Thr Asp Lys Ser Thr Arg Arg Ala Lys Gly Val Leu Leu  
 100 105 110  
 Thr Thr Gly Ala Gly Leu Leu Lys Pro Arg Lys Leu Gly Ile Asp Asn  
 115 120 125  
 Glu Glu Thr Leu Ala Asn Glu Gly Lys Ile Ser Tyr Phe Ile Thr Ser  
 130 135 140



Leu	Lys	Glu	Phe	Glu	Gly	Lys	Asn	Val	Ala	Val	Phe	Gly	Gly	Gly	Asp
145					150					155					160
Ser	Ala	Leu	Asp	Trp	Ser	Leu	Met	Leu	Glu	Lys	Val	Ala	Lys	Asn	Val
			165						170						175
His	Leu	Val	His	Arg	Arg	Thr	Ala	Phe	Arg	Gly	His	Glu	Ile	Thr	Val
			180					185					190		
Asp	Arg	Val	Met	Asn	Ser	Asn	Val	Gln	Val	His	Thr	Pro	Tyr	Thr	Phe
		195					200					205			
Ser	Asn	Leu	Ile	Glu	Asn	Glu	Leu	Glu	Leu	Lys	Lys	Ile	Lys	Ser	Glu
	210					215						220			
Glu	Ser	Leu	Asn	Phe	Ser	Ile	Asp	Lys	Ile	Leu	Val	Asn	Tyr	Gly	Phe
225					230					235					240
Leu	Thr	Asn	Gln	Val	Thr	Leu	Ala	Glu	Asn	Leu	Glu	Val	Ser	Arg	Asn
			245					250						255	
Gly	Arg	Val	Lys	Ala	Asp	Ser	Met	Met	Gln	Ser	Asn	Ile	Glu	Gly	Leu
			260					265					270		
Tyr	Val	Ala	Gly	Asp	Ala	Ser	Asp	Tyr	Pro	Gly	Lys	Met	Pro	Leu	Met
		275					280					285			
Ser	Val	Gly	Phe	Gly	Glu	Ala	Val	His	Ala	Ile	Asn	Ala	Met	Thr	Lys
	290					295					300				
Lys	Leu	Glu	Phe	Asp	His	Pro	Leu	Arg	Gly	Gly	His	Ser	Ser	Ser	Ile
305					310					315					320
Phe															

<210> 253  
 <211> 308  
 <212> PRT  
 <213> Lactococcus lactis

<400> 253															
Met	Thr	Glu	Lys	Lys	Tyr	Asp	Val	Val	Ile	Ile	Gly	Ser	Gly	Pro	Ala
1				5					10					15	
Gly	Met	Thr	Ala	Ala	Met	Tyr	Thr	Ala	Arg	Ser	Glu	Met	Lys	Thr	Leu
			20					25					30		
Leu	Leu	Glu	Arg	Gly	Val	Pro	Gly	Gly	Gln	Met	Asn	Asn	Thr	Ala	Glu
		35					40					45			
Ile	Glu	Asn	Tyr	Pro	Gly	Tyr	Glu	Thr	Ile	Met	Gly	Pro	Glu	Leu	Ser
	50					55					60				
Met	Lys	Met	Ala	Glu	Pro	Leu	Glu	Gly	Leu	Gly	Val	Glu	Asn	Ala	Tyr
65					70					75					80
Gly	Phe	Val	Thr	Ala	Ile	Glu	Asp	His	Gly	Asp	Tyr	Lys	Lys	Ile	Ile
				85					90					95	
Thr	Glu	Asp	Asp	Glu	Phe	Val	Thr	Lys	Ser	Ile	Ile	Ile	Ala	Thr	Gly
			100					105					110		
Ala	Asn	His	Arg	Lys	Leu	Glu	Ile	Pro	Gly	Glu	Glu	Glu	Tyr	Gly	Ala
		115					120					125			
Arg	Gly	Val	Ser	Tyr	Cys	Ala	Val	Cys	Asp	Gly	Ala	Phe	Phe	Arg	Asn
	130					135					140				
Gln	Glu	Ile	Leu	Val	Ile	Gly	Gly	Gly	Asp	Ser	Ala	Val	Glu	Glu	Ala
145					150					155					160
Leu	Tyr	Leu	Thr	Arg	Phe	Gly	Gln	Ser	Val	Thr	Ile	Met	His	Arg	Arg
				165					170					175	
Asp	Lys	Leu	Arg	Ala	Gln	Glu	Ile	Ile	Gln	Gln	Arg	Ala	Phe	Lys	Glu
			180					185					190		
Glu	Lys	Ile	Asn	Phe	Ile	Trp	Asp	Ser	Val	Pro	Met	Glu	Ile	Lys	Gly
		195					200					205			
Asp	Asp	Lys	Lys	Val	Gln	Ser	Val	Val	Tyr	Lys	Asn	Val	Lys	Thr	Gly
	210					215					220				
Glu	Val	Thr	Glu	Lys	Ala	Phe	Gly	Gly	Ile	Phe	Ile	Tyr	Val	Gly	Leu
225					230					235					240
Asp	Pro	Val	Ala	Glu	Phe	Ala	Gly	Asn	Leu	Gly	Ile	Thr	Asp	Glu	Ala
				245					250					255	
Gly	Trp	Ile	Ile	Thr	Asp	Asp	His	Met	Arg	Thr	Ser	Leu	Pro	Gly	Ile
		260					265						270		
Phe	Ala	Val	Gly	Asp	Val	Arg	Gln	Lys	Asp	Phe	Arg	Gln	Ile	Thr	Thr

275                      280                      285  
 Ala Ile Gly Asp Gly Ala Gln Ala Ala Gln Glu Ala Tyr Lys Phe Val  
       290                      295                      300  
 Ala Glu Leu Asp  
 305

<210> 254  
 <211> 44  
 <212> PRT  
 <213> Lactococcus lactis

<400> 254  
 Met Gln Glu Leu Asp Leu Ile Ile Val Gly Ala Gly Pro Val Gly Leu  
       1                      5                      10                      15  
 Tyr Ala Ala Phe Tyr Ala Gly Met Arg Gly Leu Ser Val Ala Ile Ile  
               20                      25                      30  
 Glu Ser Ala Gln Val Pro Gly Gly Gln Pro Gln Asn  
               35                      40

<210> 255  
 <211> 339  
 <212> PRT  
 <213> Listeria monocytogenes

<400> 255  
 Glu Phe Tyr Ser Tyr Lys Lys Glu Ile Asn Arg Tyr Leu Ala Glu Glu  
       1                      5                      10                      15  
 Asp Ser Ala Ser Ala Cys Asp Ile Leu Arg Lys Val Ile Asp Glu Lys  
               20                      25                      30  
 Pro Asn Phe Trp Pro Ala Tyr Asn Gln Leu Ala Ser Leu Tyr Phe Glu  
               35                      40                      45  
 Gln Leu Lys Glu Glu Glu Gly Val Arg Val Leu Ser Asp Leu Leu Ser  
               50                      55                      60  
 Arg Asn Pro Gly Asn Leu Leu Gly Ile Cys Asp Leu Phe Ile Tyr His  
       65                      70                      75                      80  
 Phe Tyr Lys Gly Asn Arg Lys Glu Ala Asp Glu Leu Tyr Leu Glu Leu  
               85                      90                      95  
 Arg Asp Val Leu Pro Val Leu Ala His His Lys Glu Lys Leu Gly Leu  
               100                      105                      110  
 Ile His Ala Met Met Gly Glu Tyr Glu Glu Ala Asp Asp Leu Leu Glu  
               115                      120                      125  
 Gln Val Ala Asp Leu Glu Val Thr Glu Arg Ser Lys Tyr Tyr Tyr Phe  
               130                      135                      140  
 Arg Ala Lys Ser Ser Tyr Tyr Leu Gly Asp Val Glu Gly Ala Lys Met  
       145                      150                      155                      160  
 Phe Trp His Ser Phe Leu Glu Cys Asp Leu Tyr Glu Asp Val Arg Phe  
               165                      170                      175  
 Pro Trp Glu Gln Glu Pro Asp Leu Thr Asn Asp Thr Arg Leu Val Leu  
               180                      185                      190  
 Glu Met Leu Gln Glu Glu Asp Asp Leu Thr His Met Leu Gly Val Tyr  
               195                      200                      205  
 Ala Leu Thr Ile Ser Gly Asn Arg Pro Glu Leu Val Leu Phe His Pro  
               210                      215                      220  
 Leu Leu Asp Met Ser Asp Trp Ser Tyr Met Glu His Leu Met Phe Thr  
       225                      230                      235                      240  
 Asn Phe Asp Tyr Phe Pro Asp Gly Ala Ile Glu Gln Asn Gly Tyr Leu  
               245                      250                      255  
 Ile Ala Lys Ala Met Ile Ile Leu Lys Glu Asn Gly Ile Leu Leu Asn  
               260                      265                      270  
 Glu Glu Tyr Met Ala Leu Tyr Lys Gln Met Phe Ser Leu Val Leu Ile  
               275                      280                      285  
 Asp Ala Gly Lys Asp Leu Ile Leu Gly Arg Tyr Thr Ile Glu Thr Val  
               290                      295                      300  
 Ala Ser Ala Ile Ala Lys Leu Phe Leu Pro His Leu Lys Leu Gln Leu  
       305                      310                      315                      320

Val Glu Glu Phe Glu Cys Ser Lys Cys Ala Arg Asp Ile Glu Arg Val  
 325 330 335  
 Leu Ser Arg

<210> 256  
 <211> 303  
 <212> PRT  
 <213> Methanothermobacter thermautotrophicus

<400> 256  
 Met Met Thr Asp Tyr Asp Met Ile Val Ile Gly Ala Gly Pro Ala Gly  
 1 5 10 15  
 Leu Thr Ala Gly Ile Tyr Gly Gly Arg Gln Gly Ser Ser Val Leu Met  
 20 25 30  
 Leu Asp Lys Gly Pro Ala Gly Gly Leu Gly Leu Glu Val Pro Met Met  
 35 40 45  
 Glu Asn Tyr Pro Gly Phe Glu Met Ile Ala Gly Met Ser Leu Val Thr  
 50 55 60  
 Lys Met Lys Lys Gln Ala Thr Ala Val Ala Glu Leu Arg Glu Met Glu  
 65 70 75 80  
 Glu Val Lys Glu Ile Glu Lys Gly Asp Val Phe Thr Val Lys Thr Ser  
 85 90 95  
 Arg Asp Thr Tyr Thr Ala Ser Ala Ile Ile Phe Ala Thr Gly Ser Lys  
 100 105 110  
 His Arg Gln Leu Gly Val Pro Gly Glu Asn Asp Leu Leu Gly Arg Gly  
 115 120 125  
 Val Cys Tyr Cys Ala Thr Cys Asp Gly Pro Leu Tyr Lys Gly Arg Lys  
 130 135 140  
 Val Leu Met Val Gly Gly Gly Asn Ser Ala Ala Gln Glu Ala Val Phe  
 145 150 155 160  
 Leu Lys Asn Ile Gly Cys Asp Val Ser Ile Val His Arg Arg Asp Glu  
 165 170 175  
 Leu Arg Ala Asp Lys Tyr Leu Gln Asp Lys Leu Arg Glu Met Glu Ile  
 180 185 190  
 Pro Val Ile Trp Asn Ser Val Val Lys Glu Ile Gly Gly Asp Glu Arg  
 195 200 205  
 Val Glu Glu Val Ile Ile His Asn Arg Val Thr Gly Arg Asp Glu Thr  
 210 215 220  
 Leu Lys Val Asp Gly Val Phe Ile Ala Ile Gly Glu Glu Pro Leu Asn  
 225 230 235 240  
 Gln Leu Ala Val Asp Leu Gly Val Glu Val Asp Lys Gly Gly Tyr Ile  
 245 250 255  
 Ile Thr Asp Lys Phe Gln Arg Thr Asn Val Pro Leu Val Tyr Ala Ala  
 260 265 270  
 Gly Asp Ile Thr Gly Gly Leu Asn Gln Trp Val Thr Ala Cys Ala Glu  
 275 280 285  
 Gly Ala Ile Ala Ala Thr Tyr Ala Tyr Arg Glu Ile Gln Ser Tyr  
 290 295 300

<210> 257  
 <211> 179  
 <212> PRT  
 <213> Bacillus subtilis

<400> 257  
 Met Val Ile Ser Gly Gly Gly Asp Thr Ala Val Asp Trp Ala Asn Glu  
 1 5 10 15  
 Leu Glu Pro Ile Ala Ala Ser Val Thr Val Val His Arg Arg Glu Glu  
 20 25 30  
 Phe Gly Gly Met Glu Ser Ser Val Thr Lys Met Lys Gln Ser Ser Val  
 35 40 45  
 Arg Val Leu Thr Pro Tyr Arg Leu Glu Gln Leu Asn Gly Asp Glu Glu  
 50 55 60  
 Gly Ile Lys Ser Val Thr Val Cys His Thr Glu Ser Gly Gln Arg Lys

65	Asp	Ile	Glu	Ile	Asp	Glu	Leu	Ile	Ile	Asn	His	Gly	Phe	Lys	Ile	Asp
					85					90					95	
	Leu	Gly	Pro	Met	Met	Glu	Trp	Gly	Leu	Glu	Ile	Glu	Glu	Gly	Arg	Val
				100					105					110		
	Lys	Ala	Asp	Arg	His	Met	Arg	Thr	Asn	Leu	Pro	Gly	Val	Phe	Val	Ala
			115					120					125			
	Gly	Asp	Ala	Ala	Phe	Tyr	Glu	Ser	Lys	Leu	Arg	Leu	Ile	Ala	Gly	Gly
		130					135					140				
	Phe	Thr	Glu	Gly	Pro	Thr	Ala	Val	Asn	Ser	Ala	Lys	Ala	Tyr	Leu	Asp
	145					150				155					160	
	Pro	Lys	Ala	Glu	Asn	Met	Ala	Met	Tyr	Ser	Thr	His	His	Lys	Lys	Leu
					165					170					175	
	Val	His	Lys													

<210> 258  
 <211> 307  
 <212> PRT  
 <213> Mycoplasma pulmonis

<400> 258

Met	Ser	Gln	Asn	Lys	Ile	Tyr	Asp	Val	Ala	Ile	Ile	Gly	Ala	Gly	Pro
1				5					10					15	
Gly	Ala	Leu	Thr	Ala	Ala	Ile	Tyr	Thr	Ser	Arg	Gly	Asn	Leu	Asp	Thr
			20					25					30		
Val	Phe	Ile	Asp	Asn	Ala	Ala	Pro	Gly	Gly	Lys	Leu	Ile	Tyr	Ala	Ser
		35					40					45			
Lys	Ile	Glu	Asn	Trp	Pro	Gly	Asp	Thr	Ile	Val	Lys	Gly	Thr	Asp	Leu
	50					55					60				
Ala	Ile	Arg	Phe	Phe	Glu	His	Ala	Gln	Ala	Phe	Gly	Ala	Lys	Tyr	Glu
65					70				75					80	
Tyr	Gly	Lys	Val	Val	Asp	Leu	Ile	Asn	Ile	Lys	Asp	Asp	Leu	Lys	Glu
				85				90					95		
Leu	Val	Leu	Glu	Asp	Gly	Lys	Lys	Ile	Gln	Ala	Lys	Ser	Val	Ile	Ile
			100					105					110		
Ala	Ser	Gly	Met	Val	Ser	Arg	Lys	Pro	Arg	Glu	Ile	Leu	Asn	Tyr	Asp
		115					120					125			
Glu	Phe	Glu	Asn	Arg	Gly	Val	Ser	Tyr	Cys	Val	Ile	Cys	Asp	Gly	Pro
	130				135					140					
Met	Tyr	Gly	His	Asn	Pro	Ala	Ile	Ile	Ile	Gly	Gly	Gly	Asn	Ser	Ala
145					150					155					160
Val	Glu	Glu	Gly	Thr	Phe	Leu	Ser	Ser	Ile	Ala	Ser	Lys	Val	Tyr	Val
				165					170					175	
Ile	Val	Arg	Asp	Ser	Asp	Phe	Ile	Ala	Glu	Lys	Ala	Leu	Val	Asn	Asp
		180						185					190		
Leu	Lys	Ser	Arg	Lys	Asn	Ile	Glu	Val	Leu	Phe	Asn	Ala	Ser	Val	Lys
		195					200					205			
Glu	Leu	His	Gly	Lys	Asp	Ala	Leu	Glu	Tyr	Ala	Ile	Val	Asn	His	Asn
	210					215					220				
Gly	Lys	Glu	Val	Lys	Leu	Glu	Val	Ala	Ser	Leu	Phe	Pro	Tyr	Ile	Gly
225					230					235				240	
Phe	Leu	Pro	Ser	Ala	Glu	Tyr	Ala	Lys	Asn	Ala	Gly	Val	Leu	Glu	Pro
				245					250					255	
Asn	Gly	Phe	Ile	Lys	Thr	Asp	Glu	Phe	Met	Glu	Thr	Lys	Val	Pro	Gly
		260					265						270		
Ile	Tyr	Ala	Ile	Gly	Asp	Ile	Arg	Ile	Lys	Asp	Ile	Arg	Gln	Ile	Leu
	275					280					285				
Thr	Ala	Thr	Ser	Asp	Gly	Thr	Ile	Ala	Gly	Lys	Ile	Leu	Thr	Asn	Arg
	290					295					300				
Ile	Lys	Lys													
305															

<210> 259  
 <211> 316

<212> PRT

<213> Neisseria meningitidis

<400> 259

Met	Ser	Gln	His	Arg	Lys	Leu	Ile	Ile	Leu	Gly	Ser	Gly	Pro	Ala	Gly
1				5					10					15	
Tyr	Thr	Ala	Ala	Val	Tyr	Ala	Ala	Arg	Ala	Asn	Leu	Asn	Pro	Val	Ile
			20					25					30		
Ile	Thr	Gly	Ile	Ala	Gln	Gly	Gly	Gln	Leu	Met	Thr	Thr	Thr	Glu	Val
		35				40						45			
Asp	Asn	Trp	Pro	Ala	Asp	Ala	Asp	Gly	Val	Gln	Gly	Thr	Glu	Leu	Met
50					55						60				
Ala	Arg	Phe	Leu	Ala	His	Ala	Glu	Arg	Phe	Gly	Thr	Glu	Ile	Ile	Phe
65					70					75					80
Asp	Gln	Ile	Asn	Ala	Val	Asp	Leu	Gln	Lys	Arg	Pro	Phe	Thr	Leu	Lys
				85					90					95	
Gly	Asp	Met	Gly	Glu	Tyr	Thr	Cys	Asp	Ala	Leu	Ile	Val	Ala	Thr	Gly
			100					105					110		
Ala	Ser	Ala	Lys	Tyr	Leu	Gly	Leu	Pro	Ser	Glu	Glu	Ala	Phe	Ala	Gly
		115					120					125			
Lys	Gly	Val	Ser	Ala	Cys	Ala	Thr	Cys	Asp	Gly	Phe	Phe	Tyr	Lys	Asn
130						135					140				
Gln	Asp	Val	Ala	Val	Val	Gly	Gly	Gly	Asn	Thr	Ala	Val	Glu	Glu	Ala
145					150					155					160
Leu	Tyr	Leu	Ala	Asn	Ile	Ala	Lys	Thr	Val	Thr	Leu	Ile	His	Arg	Arg
				165					170					175	
Ser	Glu	Phe	Arg	Ala	Glu	Lys	Ile	Met	Ile	Asp	Lys	Leu	Met	Lys	Arg
			180					185					190		
Val	Glu	Glu	Gly	Lys	Ile	Ile	Leu	Lys	Leu	Glu	Ser	Asn	Leu	Gln	Glu
		195					200					205			
Val	Leu	Gly	Asp	Asp	Arg	Gly	Val	Asn	Gly	Ala	Leu	Leu	Lys	Asn	Asn
210						215					220				
Asp	Gly	Ser	Glu	Gln	Gln	Ile	Ala	Val	Ser	Gly	Ile	Phe	Ile	Ala	Ile
225					230					235					240
Gly	His	Lys	Pro	Asn	Thr	Asp	Ile	Phe	Lys	Gly	Gln	Leu	Glu	Met	Asp
				245					250					255	
Glu	Ala	Gly	Tyr	Leu	Lys	Thr	Lys	Gly	Gly	Thr	Ala	Asp	Asn	Val	Gly
			260					265					270		
Ala	Thr	Asn	Ile	Glu	Gly	Val	Trp	Ala	Ala	Gly	Asp	Val	Lys	Asp	His
		275					280					285			
Thr	Tyr	Arg	Gln	Ala	Ile	Thr	Ser	Ala	Ala	Ser	Gly	Cys	Gln	Ala	Ala
290						295					300				
Leu	Asp	Ala	Glu	Arg	Trp	Leu	Gly	Ser	Gln	Asn	Ile				
305					310					315					

<210> 260

<211> 316

<212> PRT

<213> Neisseria meningitidis

<400> 260

Met	Ser	Gln	His	Arg	Lys	Leu	Ile	Ile	Leu	Gly	Ser	Gly	Pro	Ala	Gly
1				5					10					15	
Tyr	Thr	Ala	Ala	Val	Tyr	Ala	Ala	Arg	Ala	Asn	Leu	Asn	Pro	Val	Ile
			20					25					30		
Ile	Thr	Gly	Ile	Ala	Gln	Gly	Gly	Gln	Leu	Met	Thr	Thr	Thr	Glu	Val
		35				40						45			
Asp	Asn	Trp	Pro	Ala	Asp	Ala	Asp	Gly	Val	Gln	Gly	Pro	Glu	Leu	Met
50					55						60				
Ala	Arg	Phe	Leu	Ala	His	Ala	Glu	Arg	Phe	Gly	Thr	Glu	Ile	Ile	Phe
65					70					75					80
Asp	Gln	Ile	Asn	Ala	Val	Asp	Leu	Gln	Lys	Arg	Pro	Phe	Thr	Leu	Lys
				85					90					95	
Gly	Asp	Met	Gly	Glu	Tyr	Thr	Cys	Asp	Ala	Leu	Ile	Val	Ala	Thr	Gly
			100					105				110			
Ala	Ser	Ala	Lys	Tyr	Leu	Gly	Leu	Pro	Ser	Glu	Glu	Ala	Phe	Ala	Gly



Ala Thr Gln Thr Ser Ile Glu Gly Val Phe Ala Ala Gly Asp Val Ala  
275 280 285  
Asp His Val Tyr Arg Gln Ala Ile Thr Ser Ala Gly Ala Gly Cys Met  
290 295 300  
Ala Ala Leu Asp Ala Glu Lys Tyr Leu Asp Asp His  
305 310 315

<210> 262  
<211> 316  
<212> PRT  
<213> *Pseudomonas aeruginosa*

<400> 262  
Met Pro Asp Thr Leu Arg His Ala Arg Val Ile Ile Leu Gly Ser Gly  
1 5 10 15  
Pro Ala Gly Tyr Ser Ala Ala Val Tyr Ala Ala Arg Ala Asn Leu Lys  
20 25 30  
Pro Leu Leu Ile Thr Gly Met Gln Ala Gly Gly Gln Leu Thr Thr Thr  
35 40 45  
Thr Glu Val Asp Asn Trp Pro Gly Asp Pro His Gly Leu Thr Gly Pro  
50 55 60  
Ala Leu Met Gln Arg Met Gln Glu His Ala Glu Arg Phe Glu Thr Glu  
65 70 75 80  
Ile Val Phe Asp His Ile His Ala Val Asp Leu Ala Gly Lys Pro Phe  
85 90 95  
Thr Leu Arg Gly Asp Asn Gly Thr Tyr Thr Cys Asp Ala Leu Ile Val  
100 105 110  
Ala Thr Gly Ala Ser Ala Arg Tyr Leu Gly Leu Pro Ser Glu Gln Ala  
115 120 125  
Phe Met Gly Lys Gly Val Ser Ala Cys Ala Thr Cys Asp Gly Phe Phe  
130 135 140  
Tyr Arg Asn Arg Glu Val Ala Val Ile Gly Gly Gly Asn Thr Ala Val  
145 150 155 160  
Glu Glu Ala Leu Tyr Leu Ala Asn Ile Ala Ser Arg Val Thr Leu Val  
165 170 175  
His Arg Arg Glu Thr Phe Arg Ala Glu Lys Ile Leu Gln Asp Lys Leu  
180 185 190  
Gln Ala Arg Val Ala Glu Gly Lys Ile Val Leu Lys Leu Asn Ala Glu  
195 200 205  
Val Asp Glu Val Leu Gly Asp Thr Met Gly Val Thr Gly Val Arg Leu  
210 215 220  
Lys Thr Arg Asp Gly Gly Ser Glu Glu Ile Ala Val Asp Gly Met Phe  
225 230 235 240  
Val Ala Ile Gly His Thr Pro Asn Thr Ser Leu Phe Glu Gly Gln Leu  
245 250 255  
Ala Leu Lys Asp Gly Tyr Leu Val Val Asn Gly Gly Arg Glu Gly Asn  
260 265 270  
Ala Thr Ala Thr Asn Val Pro Gly Val Phe Ala Ala Gly Asp Val Ala  
275 280 285  
Asp His Val Tyr Arg Gln Ala Ile Thr Ser Ala Gly Ala Gly Cys Met  
290 295 300  
Ala Ala Leu Asp Val Glu Arg Tyr Leu Asp Ser Leu  
305 310 315

<210> 263  
<211> 345  
<212> PRT  
<213> *Pyrococcus abyssi*

<400> 263  
Met Leu Leu Asn Ile His Gln Glu Ser Tyr Val Glu Val Val Lys Met  
1 5 10 15  
Phe Ser Leu Gly Gly Leu Gly Lys Ser Arg Val Asp Glu Ser Lys Val  
20 25 30  
Trp Asp Val Ile Ile Ile Gly Ala Gly Pro Ala Gly Tyr Thr Ala Ala





Ser	Ala	Val	Asp	Trp	Ala	Ile	Thr	Leu	Ser	Glu	Ile	Ala	Asn	Lys	Ile
				165					170					175	
Tyr	Leu	Val	His	Arg	Arg	Asp	Lys	Phe	Thr	Ala	Ala	Thr	Glu	Ser	Val
			180					185					190		
Arg	Gln	Leu	Arg	His	Ile	Ala	Glu	Thr	Gly	Lys	Ile	Glu	Leu	Val	Thr
		195					200					205			
Gly	Tyr	Gln	Leu	Asn	Asn	Leu	Asp	Gly	His	Asn	Ser	Glu	Leu	Arg	Ser
	210					215					220				
Val	Ile	Val	Lys	Asp	Leu	Gln	Asn	Asn	Ile	Arg	Lys	Leu	Asp	Ala	Asn
225					230					235				240	
Ile	Leu	Leu	Pro	Phe	Phe	Gly	Leu	Lys	Gln	Asp	Leu	Gly	Pro	Leu	Ala
				245					250					255	
Asn	Trp	Gly	Phe	Asn	Val	Arg	Leu	Gln	His	Ile	Glu	Val	Asp	Asn	Tyr
			260					265					270		
Tyr	Tyr	Gln	Thr	Asn	Ile	Lys	Gly	Ile	Tyr	Ala	Ile	Gly	Asp	Val	Ala
		275					280					285			
His	Tyr	Val	Gly	Lys	Leu	Lys	Leu	Ile	Ile	Thr	Gly	Phe	Ala	Glu	Ala
	290					295					300				
Ala	Cys	Ser	Leu	His	His	Ala	Tyr	Ser	Arg	Val	Phe	Asp	Gly	Lys	Ala
305					310					315					320
Leu	His	Phe	Glu	Tyr	Ser	Thr	Asn	Lys	Tyr	Glu	Gln	Lys	Gln		
				325					330						

<210> 265

<211> 311

<212> PRT

<213> Staphylococcus aureus

<400> 265

Met	Thr	Glu	Ile	Asp	Phe	Asp	Ile	Ala	Ile	Ile	Gly	Ala	Gly	Pro	Ala
1				5					10					15	
Gly	Met	Thr	Ala	Ala	Val	Tyr	Ala	Ser	Arg	Ala	Asn	Leu	Lys	Thr	Val
			20					25					30		
Met	Ile	Glu	Arg	Gly	Ile	Pro	Gly	Gly	Gln	Met	Ala	Asn	Thr	Glu	Glu
		35					40					45			
Val	Glu	Asn	Phe	Pro	Gly	Phe	Glu	Met	Ile	Thr	Gly	Pro	Asp	Leu	Ser
	50					55					60				
Thr	Lys	Met	Phe	Glu	His	Ala	Lys	Lys	Phe	Gly	Ala	Val	Tyr	Gln	Tyr
65					70					75				80	
Gly	Asp	Ile	Lys	Ser	Val	Glu	Asp	Lys	Gly	Glu	Tyr	Lys	Val	Ile	Asn
				85					90					95	
Phe	Gly	Asn	Lys	Glu	Leu	Thr	Ala	Lys	Ala	Val	Ile	Ile	Ala	Thr	Gly
			100					105					110		
Ala	Gly	Tyr	Lys	Lys	Ile	Gly	Val	Pro	Gly	Glu	Gln	Glu	Leu	Gly	Gly
		115					120					125			
Arg	Gly	Val	Ser	Tyr	Cys	Ala	Val	Cys	Asp	Gly	Ala	Phe	Phe	Lys	Asn
	130					135					140				
Lys	Arg	Leu	Phe	Val	Ile	Gly	Gly	Gly	Asp	Ser	Ala	Val	Glu	Glu	Gly
145					150					155				160	
Thr	Phe	Leu	Thr	Lys	Phe	Ala	Asp	Lys	Val	Thr	Ile	Val	His	Arg	Arg
				165					170					175	
Asp	Glu	Leu	Arg	Ala	Gln	Arg	Ile	Leu	Gln	Asp	Arg	Ala	Phe	Lys	Asn
		180						185					190		
Asp	Lys	Ile	Asp	Phe	Ile	Trp	Ser	His	Thr	Leu	Lys	Ser	Ile	Asn	Glu
		195					200					205			
Lys	Asp	Gly	Lys	Val	Gly	Ser	Val	Thr	Leu	Thr	Ser	Thr	Lys	Asp	Gly
	210					215					220				
Ser	Glu	Glu	Thr	His	Glu	Ala	Asp	Gly	Val	Phe	Ile	Tyr	Ile	Gly	Met
225					230					235				240	
Lys	Pro	Leu	Thr	Ala	Pro	Phe	Lys	Asp	Leu	Gly	Ile	Thr	Asn	Asp	Val
				245					250					255	
Gly	Tyr	Ile	Val	Thr	Lys	Asp	Asp	Met	Thr	Thr	Ser	Val	Pro	Gly	Ile
		260						265					270		
Phe	Ala	Ala	Gly	Asp	Val	Arg	Asp	Lys	Gly	Leu	Arg	Gln	Ile	Val	Thr
		275					280					285			
Ala	Thr	Gly	Asp	Gly	Ser	Ile	Ala	Ala	Gln	Ser	Thr	Ser	Gly	Tyr	Ile

290  
Glu His Leu Asn Asp Gln Ala  
305 310

300

<210> 266  
<211> 326  
<212> PRT  
<213> Streptomyces coelicolor

<400> 266  
Met Ser Thr Ala Lys Asp Val Arg Asp Val Ile Val Ile Gly Ser Gly  
1 5 10 15  
Pro Ala Gly Tyr Thr Ala Ala Leu Tyr Thr Ala Arg Ala Ser Leu Asn  
20 25 30  
Pro Leu Val Phe Gly Gly Ala Ile Phe Val Gly Gly Ser Leu Thr Thr  
35 40 45  
Thr Thr Glu Val Glu Asn Phe Pro Gly Phe Pro Asp Gly Val Gln Gly  
50 55 60  
Pro Glu Leu Met Glu Asn Met Arg Ala Gln Ala Glu Arg Phe Gly Ala  
65 70 75 80  
Glu Met Val Asp Asp Ile Val Ala Val Asp Leu Thr Gly Asp Val  
85 90 95  
Lys Thr Val Thr Asp Thr Ala Gly Thr Val His Arg Ala Arg Thr Val  
100 105 110  
Ile Val Ala Thr Gly Ser Gly Tyr Arg Lys Leu Gly Val Pro Lys Glu  
115 120 125  
Asp Glu Leu Ser Gly Arg Gly Val Ser Trp Cys Ala Thr Cys Asp Gly  
130 135 140  
Phe Phe Phe Arg Asp Arg Asp Ile Val Val Val Gly Gly Gly Asp Thr  
145 150 155 160  
Ala Met Glu Glu Ala Thr Phe Leu Thr Arg Phe Ala Arg Ser Val Thr  
165 170 175  
Val Val His Arg Arg Ser Ala Leu Arg Ala Ser Gln Val Met Gln Asn  
180 185 190  
Arg Ala Phe Ser Glu Asp Lys Ile Ser Leu Ala Phe Asp Ser Glu Val  
195 200 205  
Ala Thr Leu His Glu Glu Asn Gly Met Leu Ser Gly Met Thr Leu Arg  
210 215 220  
Asp Thr Leu Thr Gly Glu Thr Arg Glu Leu Ala Thr Thr Gly Leu Phe  
225 230 235 240  
Ile Ala Ile Gly His Asp Pro Arg Thr Glu Leu Phe Lys Gly Gln Leu  
245 250 255  
His Leu Asp Ser Glu Gly Tyr Leu Met Val Glu Ser Pro Ser Thr Arg  
260 265 270  
Thr Asn Val Pro Gly Val Phe Gly Ala Gly Asp Val Val Asp His Thr  
275 280 285  
Tyr Arg Gln Ala Ile Thr Ala Ala Ser Ser Gly Cys Ala Ala Ala Leu  
290 295 300  
Asp Ala Glu Arg Tyr Leu Ala Ala Arg Ser Asp Thr Ser Val Ser Ala  
305 310 315 320  
Glu Val Val Ala Val Ala  
325

<210> 267  
<211> 558  
<212> PRT  
<213> Streptomyces coelicolor

<400> 267  
Met Ala Gln Ala Asp Gly Glu Thr Arg Thr Val Ile Met Thr Val Asp  
1 5 10 15  
Asp Asp Pro Gly Val Ser Arg Ala Val Ala Arg Asp Leu Arg Arg Arg  
20 25 30  
Tyr Gly Ala Thr Tyr Arg Ile Val Arg Ala Glu Ser Gly Glu Ser Ala  
35 40 45

Leu	Asp	Ala	Leu	Arg	Glu	Leu	Lys	Leu	Arg	Gly	Asp	Leu	Val	Ala	Val
50						55					60				
Ile	Leu	Ala	Asp	Tyr	Arg	Met	Pro	Gln	Met	Asn	Gly	Ile	Glu	Phe	Leu
65					70					75					80
Glu	Gln	Ala	Leu	Asp	Val	Tyr	Pro	Gly	Ala	Arg	Arg	Val	Leu	Leu	Thr
				85					90					95	
Ala	Tyr	Ala	Asp	Thr	Asn	Ala	Ala	Ile	Asp	Ala	Ile	Asn	Val	Val	Asp
			100					105					110		
Leu	Asp	His	Tyr	Leu	Leu	Lys	Pro	Trp	Asp	Pro	Pro	Glu	Glu	Lys	Leu
	115						120					125			
Tyr	Pro	Val	Leu	Asp	Asp	Leu	Gln	Ala	Trp	Arg	Ala	Gly	Asp	His	
130					135					140					
Arg	Pro	Val	Pro	Ser	Thr	Lys	Val	Val	Gly	His	Arg	Trp	Ser	Ala	Arg
145					150					155					160
Ser	Ser	Glu	Val	Arg	Glu	Phe	Leu	Ala	Arg	Asn	Gln	Val	Pro	Tyr	Arg
				165					170					175	
Trp	Tyr	Ser	Ser	Asp	Glu	Pro	Glu	Gly	Arg	Arg	Leu	Leu	Ser	Ala	Ala
		180						185					190		
Gly	Gln	Asp	Gly	Gln	Arg	Leu	Pro	Val	Val	Ile	Thr	Pro	Asp	Gly	Thr
		195					200					205			
Pro	Leu	Val	Glu	Pro	Glu	Ala	Pro	Glu	Leu	Ala	Ala	Arg	Val	Gly	Leu
	210					215						220			
Ala	Thr	Thr	Pro	Thr	Ser	Asp	Phe	Tyr	Asp	Leu	Val	Val	Ile	Gly	Gly
225					230					235					240
Gly	Pro	Ala	Gly	Leu	Gly	Ala	Ala	Val	Tyr	Gly	Ala	Ser	Glu	Gly	Leu
				245					250					255	
Arg	Thr	Val	Leu	Val	Glu	Arg	Ser	Ala	Thr	Gly	Gly	Gln	Ala	Gly	Gln
			260					265					270		
Ser	Ser	Arg	Ile	Glu	Asn	Tyr	Leu	Gly	Phe	Pro	Asp	Gly	Val	Ser	Gly
		275					280					285			
Gly	Gln	Leu	Thr	Glu	Arg	Ala	Arg	Arg	Gln	Ala	Ala	Arg	Phe	Gly	Ala
	290					295					300				
Glu	Ile	Leu	Thr	Ala	Arg	Glu	Val	Thr	Gly	Leu	Glu	Ala	Asn	Gly	Ala
305					310					315					320
Ala	Arg	Val	Val	Arg	Phe	Ser	Asp	Gly	Ser	Ala	Ile	Ala	Ala	His	Ser
				325					330					335	
Val	Ile	Leu	Ala	Thr	Gly	Val	Ser	Tyr	Arg	Gln	Leu	Thr	Ala	Pro	Gly
			340					345					350		
Thr	Glu	Asp	Leu	Ala	Gly	Cys	Gly	Val	Phe	Tyr	Gly	Ser	Ala	Leu	Thr
		355					360					365			
Glu	Ala	Ala	Ser	Cys	Gln	Gly	His	Asp	Val	Tyr	Ile	Val	Gly	Gly	Ala
	370					375					380				
Asn	Ser	Ala	Gly	Gln	Ala	Ala	Met	Tyr	Leu	Ala	Arg	Gly	Ala	Lys	Ser
385					390					395					400
Val	Thr	Leu	Leu	Val	Arg	Gly	Gly	Ser	Leu	Glu	Ala	Ser	Met	Ser	Tyr
				405					410					415	
Tyr	Leu	Ile	Gln	Gln	Ile	Glu	Glu	Thr	Pro	Asn	Ile	Arg	Val	Arg	Cys
			420					425					430		
Gly	Thr	Leu	Val	Glu	Gly	Ala	His	Gly	Asp	Gly	His	Leu	Glu	Arg	Leu
		435				440						445			
Thr	Leu	Arg	Asp	Ala	Ala	Ser	Gly	Ala	Thr	Glu	Leu	Val	Asp	Ala	Gln
	450					455					460				
Trp	Leu	Phe	Val	Phe	Ile	Gly	Ala	Ala	Pro	Leu	Thr	Asp	Trp	Leu	Asp
465					470					475					480
Gly	Thr	Val	Leu	Arg	Asp	Glu	Arg	Gly	Phe	Ile	Leu	Ala	Gly	Pro	Asp
				485					490					495	
Leu	Thr	Pro	Asp	Gly	Arg	Pro	Pro	Ala	Gly	Trp	Glu	Leu	Asp	Arg	Pro
			500					505					510		
Pro	Tyr	His	Leu	Glu	Thr	Ser	Val	Pro	Gly	Val	Phe	Val	Ala	Gly	Asp
		515					520					525			
Ala	Arg	Ala	Glu	Ser	Ala	Lys	Arg	Val	Ala	Ser	Ala	Val	Gly	Glu	Gly
	530					535					540				
Ala	Met	Ala	Val	Met	Leu	Val	His	Arg	Tyr	Leu	Glu	Gln	Ser		
545					550					555					

<210> 268

<211> 303  
 <212> PRT  
 <213> Streptococcus pneumoniae

<400> 268  
 Met Tyr Asp Thr Ile Ile Ile Gly Ala Gly Pro Ala Gly Met Thr Ala  
 1 5 10 15  
 Ala Leu Tyr Ala Ala Arg Ser Asn Leu Lys Val Ala Leu Ile Glu Gly  
 20 25 30  
 Gly Leu Pro Gly Gly Gln Met Asn Asn Thr Ser Asp Ile Glu Asn Tyr  
 35 40 45  
 Pro Gly Tyr Ala Asn Ile Ser Gly Pro Glu Leu Ala Glu Lys Met Phe  
 50 55 60  
 Glu Pro Leu Glu Asn Leu Gly Val Glu His Ile Tyr Gly Tyr Val Glu  
 65 70 75 80  
 Asn Val Glu Asp His Gly Asp Phe Lys Lys Val Met Thr Asp Asp Gln  
 85 90 95  
 Thr Tyr Glu Thr Arg Thr Val Ile Val Ala Thr Gly Ser Lys His Arg  
 100 105 110  
 Pro Leu Gly Val Pro Gly Glu Glu Glu Leu Asn Ser Arg Gly Val Ser  
 115 120 125  
 Tyr Cys Ala Val Cys Asp Gly Ala Phe Phe Arg Asp Gln Asp Leu Leu  
 130 135 140  
 Val Val Gly Gly Gly Asp Ser Ala Val Glu Glu Ala Leu Phe Leu Thr  
 145 150 155 160  
 Arg Phe Ala Lys Thr Val Thr Ile Val His Arg Arg Asp Gln Leu Arg  
 165 170 175  
 Ala Gln Lys Val Leu Gln Asp Arg Ala Phe Ala Asn Glu Lys Ile Ser  
 180 185 190  
 Phe Ile Trp Asp Ser Val Val Arg Glu Ile Lys Gly Glu Asn Arg Val  
 195 200 205  
 Glu Ser Val Val Phe Glu Asn Val Lys Thr Gly Gln Val Thr Glu Gln  
 210 215 220  
 Ala Phe Gly Gly Val Phe Ile Tyr Val Gly Leu Asp Pro Leu Ser Asp  
 225 230 235 240  
 Phe Val Lys Glu Leu Asn Ile Gln Asp Gln Ala Gly Trp Ile Val Thr  
 245 250 255  
 Asp Asn His Met Lys Thr Ala Val Asp Gly Ile Phe Ala Val Gly Asp  
 260 265 270  
 Val Arg Leu Lys Asp Leu Arg Gln Val Thr Thr Ala Val Gly Asp Gly  
 275 280 285  
 Ala Ile Ala Gly Gln Glu Ala Tyr Lys Phe Ile Thr Glu His Ser  
 290 295 300

<210> 269  
 <211> 330  
 <212> PRT  
 <213> Streptococcus pyogenes

<400> 269  
 Met Lys Asp Lys Ala Tyr Asp Ile Thr Ile Ile Gly Gly Gly Pro Ile  
 1 5 10 15  
 Gly Leu Phe Ala Ala Phe Tyr Ala Gly Leu Arg Gly Val Thr Val Lys  
 20 25 30  
 Ile Ile Glu Ser Leu Ser Glu Leu Gly Gly Gln Pro Ala Ile Leu Tyr  
 35 40 45  
 Pro Glu Lys Met Ile Tyr Asp Ile Pro Ala Tyr Pro Ser Leu Thr Gly  
 50 55 60  
 Val Glu Leu Thr Glu Asn Leu Ile Lys Gln Leu Ser Arg Phe Glu Asp  
 65 70 75 80  
 Arg Thr Thr Ile Cys Leu Lys Glu Glu Val Leu Thr Phe Asp Lys Val  
 85 90 95  
 Lys Gly Gly Phe Ser Ile Arg Thr Asn Lys Ala Glu His Phe Ser Lys  
 100 105 110  
 Ala Ile Ile Ile Ala Cys Gly Asn Gly Ala Phe Ala Pro Arg Thr Leu  
 115 120 125

Gly	Leu	Glu	Ser	Glu	Glu	Asn	Phe	Ala	Asp	His	Asn	Leu	Phe	Tyr	Asn
130						135					140				
Val	His	Gln	Leu	Asp	Gln	Phe	Ala	Gly	Gln	Lys	Val	Val	Ile	Cys	Gly
145					150					155					160
Gly	Gly	Asp	Ser	Ala	Val	Asp	Trp	Ala	Leu	Ala	Leu	Glu	Asp	Ile	Ala
				165					170					175	
Glu	Ser	Val	Thr	Val	Val	His	Arg	Arg	Asp	Ala	Phe	Arg	Ala	His	Glu
			180					185					190		
His	Ser	Val	Glu	Leu	Leu	Lys	Ala	Ser	Thr	Val	Asn	Leu	Leu	Thr	Pro
		195					200					205			
Tyr	Val	Pro	Lys	Ala	Leu	Lys	Gly	Ile	Gly	Asn	Leu	Ala	Glu	Lys	Leu
	210					215					220				
Val	Ile	Gln	Lys	Val	Lys	Glu	Asp	Glu	Val	Leu	Glu	Leu	Glu	Leu	Asp
225					230					235					240
Ser	Leu	Ile	Val	Ser	Phe	Gly	Phe	Ser	Thr	Ser	Asn	Lys	Asn	Leu	Lys
				245					250					255	
Asn	Trp	Asn	Leu	Asp	Tyr	Lys	Arg	Ser	Ser	Ile	Thr	Val	Ser	Pro	Leu
			260					265					270		
Phe	Gln	Thr	Ser	Gln	Glu	Gly	Ile	Phe	Ala	Ile	Gly	Asp	Ala	Ala	Ala
		275					280					285			
Tyr	Asn	Gly	Lys	Val	Asp	Leu	Ile	Ala	Thr	Gly	Phe	Gly	Glu	Ala	Pro
	290					295					300				
Thr	Ala	Val	Asn	Gln	Ala	Ile	Asn	Tyr	Ile	Tyr	Pro	Asp	Arg	Asp	Asn
305				310						315					320
Arg	Val	Val	His	Ser	Thr	Ser	Leu	Ile	Asp						
				325					330						

<210> 270

<211> 325

<212> PRT

<213> Sulfolobus solfataricus

<400> 270

Met	Pro	Leu	Lys	Thr	Tyr	Asp	Thr	Ile	Ile	Val	Gly	Ala	Gly	Ile	Ala
1				5					10					15	
Gly	Leu	Ser	Ala	Ala	Leu	Tyr	Ser	Ser	Arg	Gln	Lys	Leu	Ser	Thr	Leu
			20					25					30		
Val	Leu	Ser	Lys	Asp	Leu	Gly	Gly	Gln	Leu	Thr	Leu	Thr	Asp	Leu	Ile
			35				40					45			
Glu	Asn	Tyr	Pro	Gly	Ile	Glu	Ser	Thr	Gly	Gly	Leu	Thr	Leu	Ala	Gln
	50					55					60				
Lys	Ile	Glu	Lys	Gln	Ala	Lys	Lys	Phe	Gly	Ala	Glu	Phe	Ile	Tyr	Gly
65					70					75					80
Glu	Glu	Val	Lys	Glu	Ile	Ala	Gln	Glu	Ser	Asp	Leu	Phe	Ile	Ile	Lys
				85					90					95	
Gly	Ile	Lys	Gly	Glu	Tyr	Ala	Gly	Arg	Ala	Leu	Ile	Leu	Ala	Phe	Gly
			100					105					110		
Lys	Thr	Pro	Arg	Glu	Ile	Asn	Val	Pro	Gly	Glu	Gln	Glu	Phe	Lys	Gly
		115					120					125			
Lys	Gly	Val	Ser	Tyr	Cys	Ala	Ile	Cys	Asp	Ala	Ala	Phe	Phe	Lys	Gly
	130					135					140				
Lys	Pro	Ala	Ala	Val	Ile	Gly	Glu	Gly	Glu	Pro	Gly	Ile	Glu	Ala	Ile
145					150					155					160
Glu	Leu	Leu	Ser	Asn	Tyr	Ala	Asn	Pro	Ala	Tyr	Tyr	Ile	Thr	Ser	Ser
				165					170					175	
Ser	Tyr	Leu	Ala	Gly	Glu	Glu	Glu	Ile	Val	Lys	Asn	Val	Val	Asn	Lys
			180					185					190		
Pro	Thr	Val	Lys	Ile	Leu	Thr	Ser	Ser	Arg	Val	Leu	Glu	Ile	Arg	Gly
		195					200					205			
Asn	Ser	Lys	Val	Glu	Glu	Leu	Val	Ile	Lys	Arg	Gly	Asp	Glu	Ile	Leu
	210					215					220				
Gln	Leu	Lys	Val	Asp	Gly	Val	Ile	Ile	Glu	Met	Gly	Tyr	Thr	Leu	Lys
225					230					235					240
Thr	Glu	Phe	Leu	Lys	Gly	Phe	Val	Glu	Leu	Asn	Glu	Lys	Gly	Glu	Ile
				245					250					255	
Ile	Val	Asp	Glu	Leu	Gly	Arg	Thr	Ser	Arg	Glu	Gly	Val	Phe	Ala	Ala

			260					265				270					
Gly	Asp	Val	Thr	Gln	Thr	Pro	Tyr	Lys	Gln	Ala	Val	Val	Ala	Ala	Ala		
		275					280					285					
Glu	Gly	Val	Lys	Ala	Ala	Leu	Ser	Ala	Tyr	Asn	Tyr	Ile	Arg	Ser	Lys		
	290					295					300						
Arg	Gly	Leu	Pro	Pro	Val	Thr	Val	Asp	Trp	Lys	Ala	Glu	Lys	Lys	Lys		
305					310					315					320		
Val	Ser	Phe	Arg	Leu													
				325													

<210> 271  
 <211> 323  
 <212> PRT  
 <213> Sulfolobus solfataricus

<400> 271																	
Met	Ser	Leu	Leu	Pro	Arg	Thr	Thr	Ser	Val	Lys	Pro	Gly	Glu	Lys	Phe		
1				5					10					15			
Asp	Val	Ile	Ile	Val	Gly	Leu	Gly	Pro	Ala	Ala	Tyr	Gly	Ala	Ala	Leu		
			20					25					30				
Tyr	Ser	Ala	Arg	Tyr	Met	Leu	Lys	Thr	Leu	Val	Ile	Gly	Glu	Thr	Pro		
		35				40						45					
Gly	Gly	Gln	Leu	Thr	Glu	Ala	Gly	Ile	Val	Asp	Asp	Tyr	Leu	Gly	Leu		
	50					55					60						
Ile	Glu	Ile	Gln	Ala	Ser	Asp	Met	Ile	Lys	Val	Phe	Asn	Lys	His	Ile		
65				70						75					80		
Glu	Lys	Tyr	Glu	Val	Pro	Val	Leu	Leu	Asp	Ile	Val	Glu	Lys	Ile	Glu		
			85					90						95			
Asn	Arg	Gly	Asp	Glu	Phe	Val	Val	Lys	Thr	Lys	Arg	Lys	Gly	Glu	Phe		
			100					105					110				
Lys	Ala	Asp	Ser	Val	Ile	Leu	Gly	Ile	Gly	Val	Lys	Arg	Arg	Lys	Leu		
		115					120					125					
Gly	Val	Pro	Gly	Glu	Gln	Glu	Phe	Ala	Gly	Arg	Gly	Ile	Ser	Tyr	Cys		
	130					135					140						
Ser	Val	Cys	Asp	Ala	Pro	Leu	Phe	Lys	Asn	Arg	Val	Val	Ala	Val	Ile		
145				150					155						160		
Gly	Gly	Gly	Asp	Ser	Ala	Leu	Glu	Gly	Ala	Glu	Ile	Leu	Ser	Ser	Tyr		
			165					170						175			
Ser	Thr	Lys	Val	Tyr	Leu	Ile	His	Arg	Arg	Asp	Thr	Phe	Lys	Ala	Gln		
			180					185					190				
Pro	Ile	Tyr	Val	Glu	Thr	Val	Lys	Lys	Lys	Pro	Asn	Val	Glu	Phe	Val		
	195						200					205					
Leu	Asn	Ser	Val	Val	Lys	Glu	Ile	Lys	Gly	Asp	Lys	Val	Val	Lys	Gln		
	210					215					220						
Val	Val	Val	Glu	Asn	Leu	Lys	Thr	Gly	Glu	Ile	Lys	Glu	Leu	Asn	Val		
225				230						235					240		
Asn	Gly	Val	Phe	Ile	Glu	Ile	Gly	Phe	Asp	Pro	Pro	Thr	Asp	Phe	Ala		
			245					250						255			
Lys	Ser	Asn	Gly	Ile	Glu	Thr	Asp	Thr	Asn	Gly	Tyr	Ile	Lys	Val	Asp		
		260						265					270				
Glu	Trp	Met	Arg	Thr	Ser	Val	Pro	Gly	Val	Phe	Ala	Ala	Gly	Asp	Cys		
	275						280					285					
Thr	Ser	Ala	Trp	Leu	Gly	Phe	Arg	Gln	Val	Ile	Thr	Ala	Val	Ala	Gln		
	290				295						300						
Gly	Ala	Val	Ala	Ala	Thr	Ser	Ala	Tyr	Arg	Tyr	Val	Thr	Glu	Lys	Lys		
305				310						315					320		
Gly	Lys	Lys															

<210> 272  
 <211> 332  
 <212> PRT  
 <213> Sulfolobus solfataricus

<400> 272

Met	Asp	Glu	Tyr	Asp	Ile	Val	Val	Ile	Gly	Gly	Gly	Pro	Val	Gly	Leu
1				5					10					15	
Phe	Gly	Thr	Phe	Tyr	Ala	Gly	Leu	Arg	Asp	Met	Lys	Thr	Leu	Leu	Ile
			20					25					30		
Asp	Ala	Gln	Asp	Glu	Leu	Gly	Gly	Gln	Leu	Val	Ser	Leu	Tyr	Pro	Glu
		35					40					45			
Lys	Ile	Val	Tyr	Asp	Val	Gly	Gly	Leu	Ala	Gly	Ile	Gln	Ala	Tyr	Glu
	50					55					60				
Leu	Ala	Gln	Arg	Leu	Ile	Glu	Gln	Ala	Lys	Met	Phe	Gly	Pro	Asp	Ile
65					70				75						80
Lys	Val	Asn	Glu	Leu	Ala	Asp	Met	Ile	Glu	Lys	Thr	Asn	Asp	Asn	Met
				85					90					95	
Trp	Ile	Val	Lys	Thr	Asp	Lys	Ala	Thr	Tyr	Lys	Thr	Lys	Thr	Ile	Phe
			100					105						110	
Ile	Ala	Ala	Gly	Ile	Gly	Lys	Ile	Val	Pro	Ser	Arg	Leu	Gly	Ala	Lys
			115					120					125		
Gly	Glu	Ile	Glu	Tyr	Glu	Asn	Arg	Gly	Val	Tyr	Tyr	Thr	Val	Arg	Arg
	130					135					140				
Lys	Lys	Asp	Phe	Glu	Gly	Lys	Arg	Val	Leu	Ile	Val	Gly	Gly	Gly	Asp
145					150					155					160
Ser	Ala	Val	Asp	Trp	Ala	Leu	Thr	Leu	Ala	Pro	Val	Ala	Lys	Ser	Val
				165					170					175	
Thr	Leu	Ile	His	Arg	Arg	Asp	Gln	Phe	Arg	Ala	His	Glu	Arg	Ser	Val
			180					185					190		
Lys	Glu	Leu	Phe	Arg	Val	Ala	Asn	Val	Tyr	Val	Trp	His	Glu	Leu	Lys
	195						200					205			
Glu	Val	Lys	Gly	Asp	Gly	Asn	Lys	Val	Thr	Gln	Ala	Ile	Ile	Phe	Asp
	210					215					220				
Asn	Arg	Thr	Lys	Glu	Glu	Lys	Val	Leu	Asp	Val	Asp	Ser	Val	Ile	Ile
225					230					235					240
Ser	Ile	Gly	Tyr	Lys	Gly	Asp	Leu	Gly	Asn	Ile	Pro	Lys	Trp	Gly	Val
				245					250					255	
Thr	Met	Lys	Gly	Arg	Asp	Ile	Val	Val	Asn	Gly	Arg	Met	Glu	Thr	Asn
			260					265					270		
Leu	Pro	Gly	Val	Tyr	Ala	Gly	Gly	Asp	Ile	Val	Gln	Met	Glu	Gly	Ser
		275					280					285			
Pro	Lys	Leu	Ala	Leu	Ile	Ala	Val	Gly	Phe	Ala	His	Ala	Ala	Ile	Ala
	290					295					300				
Ile	Ser	Val	Ala	Lys	Lys	Tyr	Val	Glu	Pro	Asn	Ala	Ser	Leu	Phe	Ala
305					310					315					320
Gly	His	Ser	Ser	Glu	Met	Asp	Lys	Phe	Lys	Pro	Lys				
				325					330						

<210> 273  
 <211> 324  
 <212> PRT  
 <213> Rhizobium loti

<400> 273  
 Met Thr Thr Lys His Ala Pro Val Leu Ile Ile Gly Ser Gly Pro Ala  
 1 5 10 15  
 Gly Tyr Thr Ala Ala Val Tyr Ala Ala Arg Ala Met Leu Lys Pro Met  
 20 25 30  
 Leu Val Ala Gly Leu Gln Gln Gly Gly Gln Leu Met Ile Thr Thr Asp  
 35 40 45  
 Val Glu Asn Tyr Pro Gly Phe Ala Asp Pro Ile Gln Gly Pro Trp Leu  
 50 55 60  
 Met Glu Gln Met Met Lys Gln Ala Glu His Val Gly Thr Asp Ile Ile  
 65 70 75 80  
 Asn Asp Ile Ile Thr Glu Val Asp Leu Asn Val Arg Pro Phe Arg Ala  
 85 90 95  
 Lys Gly Asp Ser Gly Thr Thr Tyr Thr Ala Asp Ala Leu Ile Ile Ala  
 100 105 110  
 Thr Gly Ala Gln Ala Lys Trp Leu Gly Ile Pro Thr Glu Gln Asp Phe  
 115 120 125  
 Met Gly Phe Gly Val Ser Ala Cys Ala Thr Cys Asp Gly Phe Phe Tyr

130	135	140													
Arg Gly Lys Asp Val	Ala Val Val Gly Gly	Gly Asn Ser Ala Val	Glu												
145	150	155	160												
Glu Ala Leu Tyr Leu	Ser Asn Leu Ala Lys	Ser Val Thr Val Ile	His												
	165	170	175												
Arg Arg Ser Asp Phe	Arg Ala Glu Arg Ile	Leu Arg Glu Arg Leu	Leu												
	180	185	190												
Gln Lys Asp Asn Val	Arg Val Ile Trp Asp	Thr Val Val Asp Glu	Ile												
	195	200	205												
Thr Gly Arg Pro Gly	Lys Ala Pro Leu Pro	Pro Ser Val Glu Gly	Leu												
	210	215	220												
Lys Leu Lys His Ala	Val Thr Gly Ala Glu	Thr His Leu Lys Val	Asp												
225	230	235	240												
Gly Val Phe Val Ala	Ile Gly His Ala Pro	Ala Val Glu Leu Phe	Val												
	245	250	255												
Gly Lys Leu Lys Gln	Lys Pro Asn Gly Tyr	Leu Trp Thr Ala Pro	Asn												
	260	265	270												
Ser Thr Arg Thr Asp	Val Pro Gly Val Phe	Ala Ala Gly Asp Val	Thr												
	275	280	285												
Asp Asp Val Tyr Arg	Gln Ala Val Thr Ala	Ala Gly Leu Gly Cys	Met												
	290	295	300												
Ala Ala Leu Glu Ala	Glu Lys Tyr Leu Ala	Gly Ile Glu Val His	Arg												
305	310	315	320												
Glu Ala Ala Glu															

<210> 274  
 <211> 343  
 <212> PRT  
 <213> Rhizobium loti

<400> 274  
 Met Thr Gly Ile Ile Ser Thr Asp Val Leu Ile Val Gly Ala Gly Pro  
 1 5 10 15  
 Val Gly Leu Phe Ala Val Phe Glu Leu Gly Leu Phe Asp Met Lys Cys  
 20 25 30  
 His Leu Ile Asp Ile Leu Asp Lys Pro Gly Gly Gln Cys Ala Glu Leu  
 35 40 45  
 Tyr Pro Glu Lys Pro Ile Tyr Asp Ile Pro Gly Trp Pro Ser Ile Ser  
 50 55 60  
 Ala Gln Gly Leu Val Asp Lys Leu Leu Glu Gln Ile His Pro Phe Lys  
 65 70 75 80  
 Pro Asp Phe Thr Tyr Asn Arg Met Val Ser Ser Leu Glu Lys Leu Glu  
 85 90 95  
 Asp Gly Ser Phe Arg Val Thr Thr Asp Glu Asn Glu Val Phe Glu Ala  
 100 105 110  
 Lys Val Val Val Ile Ala Ala Gly Gly Ser Phe Gln Pro Lys Arg  
 115 120 125  
 Pro Pro Ile Pro Gly Ile Glu Pro Tyr Glu Gly Lys Ser Val Phe Tyr  
 130 135 140  
 Ser Val Arg Arg Met Glu Asp Phe Arg Gly His Asp Leu Val Ile Val  
 145 150 155 160  
 Gly Gly Gly Asp Ser Ala Leu Asp Trp Thr Leu Asn Leu Gln Pro Val  
 165 170 175  
 Ala Lys Ser Val Thr Leu Val His Arg Arg Pro Glu Phe Arg Ala Ala  
 180 185 190  
 Pro Asp Ser Val Asn Lys Met Tyr Ala Met Gln Glu Met Lys Gln Leu  
 195 200 205  
 Glu Phe Arg Val Gly Gln Val Thr Gly Leu Thr Gly Ala Asp Gly Gln  
 210 215 220  
 Leu Ser Ser Ala Thr Ile Lys Gly Gly Pro Asp Gly Asp Ile Glu Val  
 225 230 235 240  
 Pro Cys Thr Arg Met Leu Pro Phe Phe Gly Leu Thr Met Lys Leu Gly  
 245 250 255  
 Pro Ile Ala Glu Trp Gly Leu Asn Leu His Glu Asn Leu Ile Pro Val  
 260 265 270



Asp Thr Glu Lys Phe Gln Thr Ser Val Pro Gly Ile Phe Ala Val Gly  
 275 280 285  
 Asp Ile Asn Ser Tyr Pro Gly Lys Leu Lys Leu Ile Leu Ser Gly Phe  
 290 295 300  
 His Glu Val Ala Leu Met Ala Gln Ala Ala Lys Arg Ile Val Ser Pro  
 305 310 315 320  
 Gly Glu Arg Ile Val Phe Gln Tyr Thr Thr Ser Ser Thr Ser Leu Gln  
 325 330 335  
 Lys Lys Leu Gly Val Val Gly  
 340

<210> 275  
 <211> 15  
 <212> PRT  
 <213> *Saccharomyces cerevisiae*

<220>  
 <221> VARIANT  
 <222> 9, 11  
 <223> Xaa = Any Amino Acid

<400> 275  
 Val His Asn Ile Val Thr Ile Ile Xaa Ser Xaa Pro Ala Ala His  
 1 5 10 15

<210> 276  
 <211> 104  
 <212> PRT  
 <213> *Staphylococcus aureus*

<400> 276  
 Met Ala Ile Val Lys Val Thr Asp Ala Asp Phe Asp Ser Lys Val Glu  
 1 5 10 15  
 Ser Gly Val Gln Leu Val Asp Phe Trp Ala Thr Trp Cys Gly Pro Cys  
 20 25 30  
 Lys Met Ile Ala Pro Val Leu Glu Leu Ala Ala Asp Tyr Glu Gly  
 35 40 45  
 Lys Ala Asp Ile Leu Lys Leu Asp Val Asp Glu Asn Pro Ser Thr Ala  
 50 55 60  
 Ala Lys Tyr Glu Val Met Ser Ile Pro Thr Leu Ile Val Phe Lys Asp  
 65 70 75 80  
 Gly Gln Pro Val Asp Lys Val Val Gly Phe Gln Pro Lys Glu Asn Leu  
 85 90 95  
 Ala Glu Val Leu Asp Lys His Leu  
 100

<210> 277  
 <211> 92  
 <212> PRT  
 <213> *Staphylococcus xylosus*

<400> 277  
 Met Ala Glu Gln Val Asp Phe Asp Ile Ala Ile Ile Gly Ala Gly Pro  
 1 5 10 15  
 Ala Gly Met Thr Ala Ala Val Tyr Ala Ser Arg Ala Asn Leu Ser Thr  
 20 25 30  
 Val Met Ile Glu Arg Gly Met Pro Gly Gly Gln Met Ala Asn Thr Glu  
 35 40 45  
 Glu Val Glu Asn Phe Pro Gly Phe Glu Met Val Thr Gly Pro Asp Leu  
 50 55 60  
 Ser Thr Lys Met Phe Glu His Ala Lys Lys Phe Gly Ala Lys Tyr Gln  
 65 70 75 80  
 Tyr Gly Asp Ile Lys Ser Ile Glu Asp Lys Gly Ser  
 85 90

<210> 278  
 <211> 319  
 <212> PRT  
 <213> Thermoplasma acidophilum

<400> 278  
 Met Glu Phe Asn Leu His Ala Val Ser Ser Glu Glu Lys Glu Arg Asp  
 1 5 10 15  
 Phe Asp Val Val Ile Val Gly Ala Gly Ala Ala Gly Phe Ser Ala Ala  
 20 25 30  
 Val Tyr Ala Ala Arg Ser Gly Phe Ser Val Ala Ile Leu Asp Lys Ala  
 35 40 45  
 Val Ala Gly Gly Leu Thr Ala Glu Ala Pro Leu Val Glu Asn Tyr Leu  
 50 55 60  
 Gly Phe Lys Ser Ile Val Gly Ser Glu Leu Ala Lys Leu Phe Ala Asp  
 65 70 75 80  
 His Ala Ala Asn Tyr Ala Lys Ile Arg Glu Gly Val Glu Val Arg Ser  
 85 90 95  
 Ile Lys Lys Thr Gln Gly Gly Phe Asp Ile Glu Thr Asn Asp Asp Thr  
 100 105 110  
 Tyr His Ala Lys Tyr Val Ile Ile Thr Thr Gly Thr Thr His Lys His  
 115 120 125  
 Leu Gly Val Lys Gly Glu Ser Glu Tyr Phe Gly Lys Gly Thr Ser Tyr  
 130 135 140  
 Cys Ser Thr Cys Asp Gly Tyr Leu Phe Lys Gly Lys Arg Val Val Thr  
 145 150 155 160  
 Ile Gly Gly Gly Asn Ser Gly Ala Ile Ala Ala Ile Ser Met Ser Glu  
 165 170 175  
 Tyr Val Lys Asn Val Thr Ile Ile Glu Tyr Met Pro Lys Tyr Met Cys  
 180 185 190  
 Glu Asn Ala Tyr Val Gln Glu Ile Lys Lys Arg Asn Ile Pro Tyr Ile  
 195 200 205  
 Met Asn Ala Gln Val Thr Glu Ile Val Gly Asp Gly Lys Lys Val Thr  
 210 215 220  
 Gly Val Lys Tyr Lys Asp Arg Thr Thr Gly Glu Glu Lys Leu Ile Glu  
 225 230 235 240  
 Thr Asp Gly Val Phe Ile Tyr Val Gly Leu Ile Pro Gln Thr Ser Phe  
 245 250 255  
 Leu Lys Asp Ser Gly Val Lys Leu Asp Glu Arg Gly Tyr Ile Val Val  
 260 265 270  
 Asp Ser Arg Gln Arg Thr Ser Val Pro Gly Val Tyr Ala Ala Gly Asp  
 275 280 285  
 Val Thr Ser Gly Asn Phe Ala Gln Ile Ala Ser Ala Val Gly Asp Gly  
 290 295 300  
 Cys Lys Ala Ala Leu Ser Leu Tyr Ser Asp Ser Ile Ser Lys Lys  
 305 310 315

<210> 279  
 <211> 317  
 <212> PRT  
 <213> Thermotoga maritima

<400> 279  
 Met Val Phe Phe Asp Thr Gly Ser Leu Lys Lys Lys Glu Ile Lys Asp  
 1 5 10 15  
 Lys Tyr Asp Ile Val Val Val Gly Gly Pro Ala Gly Leu Thr Ser  
 20 25 30  
 Ala Ile Tyr Ala Arg Arg Ala Gly Leu Ser Val Leu Val Val Glu Lys  
 35 40 45  
 Ala Ile Glu Gly Gly Tyr Val Asn Leu Thr His Leu Val Glu Asn Tyr  
 50 55 60  
 Pro Gly Phe Pro Ala Ile Ser Gly Glu Glu Leu Ala Ser Lys Phe Lys  
 65 70 75 80  
 Glu His Ala Glu Lys Phe Gly Ala Asp Ile Tyr Asn Ala Glu Val Val  
 85 90 95

Lys	Leu	Glu	Val	Gln	Gly	Asp	Lys	Lys	Val	Val	Glu	Leu	Asp	Asp	Gly
			100					105					110		
Lys	Arg	Ile	Glu	Ala	Pro	Val	Val	Ile	Val	Ala	Thr	Gly	Ala	Asn	Pro
		115					120					125			
Lys	Lys	Leu	Asn	Val	Pro	Gly	Glu	Lys	Glu	Phe	Phe	Gly	Lys	Gly	Val
		130				135					140				
Ser	Tyr	Cys	Ala	Thr	Cys	Asp	Gly	Tyr	Leu	Phe	Ala	Gly	Lys	Asp	Val
145					150					155					160
Ile	Val	Val	Gly	Gly	Gly	Asp	Ser	Ala	Cys	Asp	Glu	Ser	Ile	Phe	Leu
			165						170					175	
Ser	Asn	Ile	Val	Asn	Lys	Ile	Thr	Met	Ile	Gln	Leu	Leu	Glu	Thr	Leu
			180					185					190		
Thr	Ala	Ala	Lys	Val	Leu	Gln	Glu	Arg	Val	Leu	Asn	Asn	Pro	Lys	Ile
		195					200					205			
Glu	Val	Ile	Tyr	Asn	Ser	Thr	Val	Arg	Glu	Ile	Arg	Gly	Lys	Asp	Lys
		210				215					220				
Val	Glu	Glu	Val	Val	Ile	Glu	Asn	Val	Lys	Thr	Gly	Glu	Thr	Lys	Val
225					230					235					240
Leu	Lys	Ala	Asp	Gly	Val	Phe	Ile	Phe	Ile	Gly	Leu	Asp	Pro	Asn	Ser
			245					250						255	
Lys	Leu	Leu	Glu	Gly	Leu	Val	Glu	Leu	Asp	Pro	Tyr	Gly	Tyr	Val	Ile
		260					265						270		
Thr	Asp	Glu	Asn	Met	Glu	Thr	Ser	Val	Lys	Gly	Ile	Tyr	Ala	Val	Gly
		275					280					285			
Asp	Val	Arg	Lys	Lys	Asn	Leu	Arg	Gln	Ile	Val	Thr	Ala	Val	Ala	Asp
		290			295						300				
Gly	Ala	Ile	Ala	Val	Glu	His	Ala	Ala	Lys	His	Tyr	Phe			
305					310					315					

<210> 280

<211> 326

<212> PRT

<213> Thermoplasma volcanium

<400> 280

Met	Asn	Leu	Tyr	Arg	Gly	Met	Glu	Phe	Asn	Leu	Arg	Ser	Val	Ser	Thr
1				5					10					15	
Glu	Ala	Lys	Glu	Arg	Asp	Phe	Asp	Val	Ile	Ile	Ile	Gly	Ala	Gly	Ala
			20				25						30		
Ala	Gly	Phe	Ser	Ala	Ala	Val	Tyr	Ala	Ser	Arg	Ser	Gly	Leu	Ser	Ala
		35				40					45				
Val	Ile	Leu	Asp	Lys	Asn	Val	Ala	Gly	Gly	Leu	Thr	Ala	Glu	Ala	Pro
	50				55					60					
Leu	Val	Glu	Asn	Tyr	Leu	Gly	Phe	Lys	Ser	Ile	Val	Gly	Ser	Asp	Leu
65					70				75					80	
Ala	Lys	Asn	Phe	Ala	Glu	His	Ala	Ser	Glu	Tyr	Ala	Ser	Ile	Arg	Glu
			85					90						95	
Gly	Val	Glu	Val	Lys	Ser	Val	Lys	Lys	Gly	Asp	Gly	Gly	Phe	Ile	Val
			100				105						110		
Asp	Thr	Ser	Asp	Gly	Glu	Tyr	His	Ser	Lys	Tyr	Ile	Ile	Ile	Thr	Thr
		115					120					125			
Gly	Thr	Thr	His	Lys	His	Leu	Gly	Val	Lys	Gly	Glu	Ala	Glu	Tyr	Phe
		130				135					140				
Gly	Lys	Gly	Val	Ser	Tyr	Cys	Ser	Thr	Cys	Asp	Gly	Tyr	Leu	Phe	Lys
145					150					155				160	
Asn	Lys	Asn	Val	Val	Thr	Ile	Gly	Gly	Gly	Asn	Ser	Gly	Ala	Ile	Ala
			165					170						175	
Ala	Ile	Ser	Met	Ser	Glu	Tyr	Val	Lys	Asn	Ala	Thr	Ile	Val	Glu	Tyr
			180					185					190		
Met	Pro	Arg	Tyr	Met	Cys	Glu	Asn	Ala	Tyr	Ile	Glu	Glu	Ile	Lys	Lys
		195					200					205			
Arg	Lys	Ile	Pro	Tyr	Ile	Met	Asn	Ala	Gln	Val	Thr	Glu	Ile	Val	Gly
		210				215					220				
Asp	Gly	Lys	Lys	Val	Thr	Gly	Val	Lys	Tyr	Lys	Asp	Arg	Ser	Ser	Gly
225					230					235					240
Glu	Glu	Lys	Thr	Leu	Pro	Ala	Asp	Gly	Val	Phe	Val	Tyr	Val	Gly	Leu

Ile	Pro	Gln	Thr	245	Ser	Phe	Leu	Lys	250	Asp	Ser	Gly	Val	Lys	255	Leu	Asp	Glu
Arg	Gly	Tyr	260	Ile	Ile	Val	Asp	Gly	265	Arg	Gln	Arg	Thr	Asn	270	Val	Pro	Gly
Ile	Tyr	275	Ala	Ala	Gly	Asp	Val	Thr	280	Ser	Gly	Ser	Phe	Ala	285	Gln	Ile	Ala
Ser	Ala	Val	Gly	Asp	Gly	Cys	Lys	Ala	295	Ala	Leu	Ser	Leu	Tyr	300	Ser	Asp	
305	Thr	Ile	Ser	Ser	Lys	Lys			310		315						320	
					325													

<210> 281  
 <211> 309  
 <212> PRT  
 <213> Ureaplasma parvum

<400> 281

Met	Asn	Gln	Glu	Val	Tyr	Asp	Leu	Val	10	Ile	Ile	Gly	Ala	Gly	Pro	Ala		
1	Gly	Leu	Ala	Ala	Val	Tyr	Ala	Lys	25	Arg	Ser	Gly	Leu	Asn	Val	Ile		
			20						25					30				
Ile	Val	Glu	Lys	Gln	Phe	Pro	Gly	Gly	40	Lys	Ile	Ala	Leu	Thr	Ser	Asn		
		35					40						45					
Val	Glu	Asn	Tyr	Leu	Gly	Ile	Asn	Ser	55	Ile	Pro	Gly	Pro	Glu	Leu	Ala		
	50					55						60						
Tyr	Lys	Met	Tyr	Glu	Gln	Val	Leu	Asn	70	Leu	Asn	Val	Ser	Ile	Ile	Tyr		
65					70				75							80		
Glu	Ala	Ala	Asp	Glu	Ile	Ser	Leu	Lys	90	Glu	Lys	Tyr	Lys	Lys	Ile	Lys		
			85						90						95			
Leu	Thr	Thr	Gln	Thr	Leu	Ile	Thr	Lys	105	Thr	Val	Ile	Ile	Ala	Thr	Gly		
			100					105						110				
Thr	Glu	Asn	Arg	Arg	Leu	Asn	Ile	Leu	120	Gly	Glu	Leu	Glu	Phe	Glu	Asn		
		115					120		125				125					
Lys	Gly	Ile	Ser	Tyr	Cys	Ala	Ile	Cys	135	Asp	Gly	Pro	Leu	Tyr	Lys	Asn		
	130						135		140									
Lys	Ala	Val	Ser	Val	Ile	Gly	Ser	Gly	150	Asn	Ser	Ala	Val	Glu	Glu	Ala		
145					150				155							160		
Ile	Tyr	Leu	Ala	Thr	Ile	Ala	Lys	Glu	170	Val	His	Leu	Ile	Ala	Asn	Lys		
			165					170							175			
Pro	Gln	Phe	Lys	Ala	Glu	Gln	Gln	Leu	185	Val	Gln	Ile	Ala	Asn	Asn	Thr		
		180						185						190				
Pro	Asn	Ile	Lys	Ile	Tyr	Tyr	Asn	Lys	200	Gln	Thr	Phe	Glu	Phe	Phe	Gly		
		195					200		205									
His	Gln	Phe	Leu	Glu	Gly	Leu	Lys	Phe	215	Arg	Asp	Leu	Ile	Thr	Asn	Glu		
	210					215			220									
Val	Thr	Thr	Leu	Asn	Ile	Glu	Ala	Asn	230	Phe	Thr	Phe	Ile	Gly	Leu	Leu		
225					230				235						240			
Pro	Ser	Arg	Ile	Asn	Thr	Asn	Asn	Leu	245	Cys	Ile	Phe	Asn	Glu	Val	Asn		
				245				250						255				
Gly	Phe	Ile	Thr	Thr	Asp	Lys	Asn	Met	260	Gln	Thr	Ser	Val	Cys	Gly	Ile		
		260					265		270					270				
Phe	Ala	Ala	Gly	Asp	Ile	Val	Asp	Lys	280	Asn	Val	Arg	Gln	Ile	Ala	Thr		
		275					280		285									
Ala	Thr	Asn	Asp	Gly	Val	Ile	Ala	Ala	295	Leu	Tyr	Ala	Lys	Glu	Tyr	Ile		
	290					295			300									
Thr	Arg	Asn	Asn	Trp														
305																		

<210> 282  
 <211> 318  
 <212> PRT  
 <213> Vibrio cholerae

<400> 282

Met	Ser	Asn	Val	Lys	His	Ser	Lys	Leu	Leu	Ile	Leu	Gly	Ser	Gly	Pro
1				5				10						15	
Ala	Gly	Tyr	Thr	Ala	Ala	Val	Tyr	Ala	Ala	Arg	Ala	Asn	Leu	Lys	Pro
			20					25					30		
Val	Leu	Val	Thr	Gly	Met	Gln	Gln	Gly	Gly	Gln	Leu	Thr	Thr	Thr	
		35				40					45				
Glu	Val	Glu	Asn	Trp	Pro	Gly	Asp	Ala	Glu	Gly	Leu	Thr	Gly	Pro	Ala
	50					55					60				
Leu	Met	Glu	Arg	Met	Lys	Glu	His	Ala	Glu	Arg	Phe	Asp	Thr	Glu	Ile
65					70					75					80
Val	Phe	Asp	His	Ile	Asn	Ser	Val	Asp	Leu	Ser	Ser	Arg	Pro	Phe	Arg
				85					90					95	
Leu	Thr	Gly	Asp	Ser	Gln	Glu	Tyr	Thr	Cys	Asp	Ala	Leu	Ile	Ile	Ser
			100					105					110		
Thr	Gly	Ala	Ser	Ala	Lys	Tyr	Leu	Gly	Leu	Glu	Ser	Glu	Glu	Ala	Phe
		115					120					125			
Lys	Gly	Arg	Gly	Val	Ser	Ala	Cys	Ala	Thr	Cys	Asp	Gly	Phe	Phe	Tyr
	130					135					140				
Arg	Asn	Gln	Lys	Val	Ala	Val	Val	Gly	Gly	Gly	Asn	Thr	Ala	Val	Glu
145					150					155					160
Glu	Ala	Leu	Tyr	Leu	Ser	Asn	Ile	Ala	Ser	Glu	Val	His	Leu	Val	His
				165					170					175	
Arg	Arg	Asp	Ser	Phe	Arg	Ser	Glu	Lys	Ile	Leu	Ile	Asp	Arg	Leu	Met
			180					185					190		
Asp	Lys	Val	Ala	Asn	Gly	Asn	Ile	Val	Leu	His	Thr	His	Arg	Thr	Leu
		195				200						205			
Asp	Glu	Val	Leu	Gly	Asp	Glu	Met	Gly	Val	Thr	Gly	Val	Arg	Leu	Lys
	210					215					220				
Asp	Thr	Gln	Ser	Asp	Met	Thr	Glu	Asn	Leu	Asp	Val	Met	Gly	Val	Phe
225					230					235					240
Ile	Ala	Ile	Gly	His	Gln	Pro	Asn	Ser	Gln	Ile	Phe	Glu	Gly	Gln	Leu
				245					250					255	
Glu	Met	Lys	Asn	Gly	Tyr	Ile	Val	Val	Lys	Ser	Gly	Leu	Glu	Gly	Asn
			260					265					270		
Ala	Thr	Gln	Thr	Ser	Ile	Glu	Gly	Val	Phe	Ala	Ala	Gly	Asp	Val	Met
			275				280					285			
Asp	His	Asn	Tyr	Arg	Gln	Ala	Ile	Thr	Ser	Ala	Gly	Thr	Gly	Cys	Met
	290					295					300				
Ala	Ala	Leu	Asp	Ala	Glu	Arg	Tyr	Leu	Asp	Ser	Gln	Gly	Lys		
305					310					315					

<210> 283  
 <211> 321  
 <212> PRT  
 <213> Xylella fastidiosa

Met	Ser	Asp	Tyr	Pro	Ala	Ser	Ala	Lys	His	Ser	Arg	Leu	Leu	Ile	Leu
1				5				10						15	
Gly	Ser	Gly	Pro	Ala	Gly	Trp	Thr	Ala	Ala	Val	Tyr	Ala	Ala	Arg	Ala
			20					25					30		
Asn	Leu	Gln	Pro	Val	Leu	Ile	Thr	Gly	Leu	Gln	Gln	Gly	Gly	Gln	Leu
		35				40						45			
Met	Thr	Thr	Thr	Glu	Val	Asp	Asn	Trp	Pro	Gly	Asp	Ala	His	Gly	Leu
	50					55					60				
Met	Gly	Pro	Asp	Leu	Met	Glu	Arg	Met	Gln	Ala	His	Ala	Glu	Arg	Phe
65					70					75					80
Asp	Thr	Lys	Val	Ile	Phe	Asp	Gln	Ile	Tyr	Lys	Ala	Asp	Leu	Ser	Thr
				85					90					95	
Arg	Pro	Phe	Thr	Leu	Phe	Gly	Asp	Ser	Gly	Leu	Tyr	Thr	Cys	Asp	Gly
			100					105					110		
Leu	Ile	Ile	Ala	Thr	Gly	Ala	Asn	Ala	Lys	Tyr	Leu	Gly	Ile	Pro	Ser
		115					120					125			
Glu	Glu	Ala	Phe	Lys	Gly	Arg	Gly	Val	Ser	Ala	Cys	Ala	Thr	Cys	Asp
	130					135					140				
Gly	Phe	Phe	Tyr	Arg	Asp	Gln	Asp	Val	Ala	Val	Ile	Gly	Gly	Gly	Asn

145	Thr	Ala	Val	Glu	Glu	Ala	Leu	Tyr	Leu	Ser	Asn	Ile	Ala	Arg	Lys	Val
					165					170					175	
	Tyr	Leu	Ile	His	Arg	Arg	Asp	Lys	Leu	Arg	Ala	Glu	Lys	Ile	Met	Gln
				180						185					190	
	Asn	Lys	Leu	Phe	Ser	Lys	Ala	Ala	Thr	Gly	Lys	Ile	Glu	Leu	Ile	Trp
			195					200					205			
	Asn	Asn	Ala	Val	Glu	Glu	Val	Leu	Gly	Asn	Asp	Ala	Ser	Val	Thr	Gly
			210				215					220				
	Val	Arg	Ile	Arg	Ser	Thr	Gln	Asp	Ser	Ser	Thr	Arg	Asp	Ile	Asp	Val
	225					230					235				240	
	Gln	Gly	Leu	Phe	Val	Ala	Ile	Gly	His	His	Pro	Asn	Thr	Asp	Leu	Phe
				245					250						255	
	Ala	Gly	Gln	Leu	Ala	Met	Asn	Asn	Gly	Tyr	Leu	Gln	Ile	His	Ser	Gly
			260						265					270		
	Thr	Ala	Gly	Asn	Val	Thr	Gln	Thr	Ser	Val	Glu	Gly	Val	Phe	Ala	Ala
			275					280					285			
	Gly	Asp	Val	Ala	Asp	Gln	His	Tyr	Arg	Gln	Ala	Ile	Thr	Ser	Ala	Gly
		290				295					300					
	Phe	Gly	Cys	Met	Ala	Ala	Leu	Asp	Ala	Glu	Arg	Phe	Leu	Asp	Lys	Gly
	305				310					315					320	
	Asn															

<210> 284  
 <211> 318  
 <212> PRT  
 <213> *Zymomonas mobilis*

<400> 284

Met	Ser	Ala	Asp	Pro	Ile	Ser	Thr	Arg	Val	Phe	Ile	Leu	Gly	Ser	Gly
1				5					10					15	
Pro	Ala	Gly	Leu	Thr	Ala	Ala	Ile	Tyr	Ala	Ala	Arg	Ala	Gly	Leu	Asn
			20					25					30		
Pro	Ile	Val	Ala	Gln	Gly	Leu	Gln	Pro	Gly	Gly	Gln	Leu	Thr	Ile	Thr
		35				40						45			
Thr	Glu	Val	Glu	Asn	Phe	Pro	Gly	Phe	Arg	Glu	Pro	Ile	Gln	Gly	Pro
	50				55					60					
Trp	Leu	Met	Glu	Glu	Met	Gln	Ala	Gln	Ala	Glu	Asn	Val	Gly	Ala	Lys
65					70				75					80	
Leu	Val	Trp	Asp	Ile	Ile	Thr	Ser	Val	Asp	Phe	Ser	Gln	Arg	Pro	Tyr
			85						90					95	
Arg	Leu	Met	Gly	Asp	Gly	Gly	Gln	Val	Tyr	Leu	Ala	Asp	Ser	Leu	Ile
		100					105						110		
Ile	Ser	Thr	Gly	Ala	Gln	Ala	Arg	Trp	Leu	Gly	Leu	Glu	Ser	Glu	Thr
		115					120					125			
Ala	Leu	Arg	Gly	Lys	Gly	Ile	Ser	Ala	Cys	Ala	Thr	Cys	Asp	Gly	Phe
	130				135					140					
Phe	Phe	Arg	Gly	Lys	Lys	Val	Val	Val	Ile	Gly	Gly	Gly	Asn	Thr	Ala
145				150					155					160	
Val	Glu	Glu	Ala	Leu	Tyr	Leu	Thr	Asn	His	Ser	Pro	Glu	Val	Thr	Leu
			165					170						175	
Ile	His	Arg	Arg	Asp	Ser	Leu	Arg	Ala	Glu	Lys	Ile	Met	Gln	Lys	Arg
		180					185						190		
Leu	Leu	Ala	Asn	Pro	Lys	Ile	Lys	Ile	Arg	Trp	Asn	Ser	Glu	Val	Ala
		195				200						205			
Glu	Phe	Ile	Ala	Gly	Glu	Asp	Ser	Ala	Leu	Ser	Ala	Val	Lys	Leu	Lys
	210				215						220				
Asp	Thr	Lys	Thr	Gly	Glu	Glu	Ser	Leu	Leu	Glu	Thr	Glu	Gly	Ala	Phe
225				230					235					240	
Ile	Ala	Ile	Gly	His	Lys	Pro	Ala	Thr	Glu	Leu	Phe	Gln	Gly	His	Leu
			245					250						255	
Lys	Leu	Asp	Asp	Glu	Gly	Tyr	Ile	Glu	Val	Thr	Pro	Gly	Thr	Thr	Gln
		260				265							270		
Thr	Ser	Ile	Lys	Gly	Ile	Phe	Ala	Cys	Gly	Asp	Val	Met	Asp	Lys	His
		275				280						285			

Tyr	Arg	Gln	Ala	Val	Thr	Ala	Ala	Gly	Thr	Gly	Cys	Met	Ala	Ala	Leu
	290					295					300				
Glu	Ala	Glu	Arg	Phe	Leu	Gly	Glu	Ile	Asp	Phe	Lys	Glu	Asp		
305					310					315					

<210> 285  
 <211> 122  
 <212> PRT  
 <213> Bos taurus

<400> 285																
Lys	Leu	Met	His	Gln	Ala	Ala	Leu	Leu	Gly	Gln	Ala	Leu	Thr	Asp	Ser	
1				5					10					15		
Arg	Lys	Phe	Gly	Trp	Glu	Tyr	Ser	Gln	Val	Arg	His	Ser	Trp	Ala		
		20						25				30				
Thr	Met	Thr	Glu	Ala	Ile	Gln	Ser	His	Ile	Gly	Ser	Leu	Ser	Trp	Gly	
		35					40					45				
His	Arg	Leu	Ala	Leu	Arg	Glu	Lys	Ala	Val	Thr	Tyr	Val	Asn	Ser	Phe	
	50					55					60					
Gly	Glu	Phe	Val	Glu	His	Lys	Val	Lys	Ala	Thr	Asn	Glu	Lys	Gly		
65					70				75					80		
Gln	Glu	Val	Leu	Tyr	Thr	Ala	Ala	Lys	Phe	Val	Ile	Ala	Thr	Gly	Glu	
				85					90					95		
Arg	Pro	Arg	Tyr	Leu	Gly	Ile	Pro	Gly	Asp	Arg	Glu	Tyr	Cys	Ile	Thr	
			100					105					110			
Ser	Asp	Asp	Leu	Phe	Ser	Leu	Pro	Tyr	Cys							
		115					120									

<210> 286  
 <211> 511  
 <212> PRT  
 <213> Bos taurus

<400> 286																
Met	Ala	Ala	Leu	Arg	Gly	Ala	Ala	Ala	Arg	Phe	Arg	Gly	Arg	Ala	Pro	
1				5					10					15		
Gly	Gly	Ala	Arg	Gly	Ala	Ala	Gly	Arg	Gln	Cys	Tyr	Asp	Leu	Leu	Val	
		20						25					30			
Ile	Gly	Gly	Gly	Ser	Gly	Gly	Leu	Ala	Cys	Ala	Lys	Glu	Ala	Ala	Gln	
		35					40					45				
Leu	Gly	Lys	Lys	Val	Ala	Val	Leu	Asp	Tyr	Val	Glu	Pro	Ser	Pro	Gln	
	50					55					60					
Gly	Thr	Arg	Trp	Gly	Leu	Gly	Gly	Thr	Cys	Val	Asn	Val	Gly	Cys	Ile	
65					70				75						80	
Pro	Lys	Lys	Leu	Met	His	Gln	Ala	Ala	Leu	Gly	Gly	Met	Ile	Arg		
				85					90				95			
Asp	Ala	Pro	His	Tyr	Gly	Trp	Gly	Val	Ala	Gln	Ala	Pro	His	Ser	Trp	
			100					105					110			
Ala	Thr	Leu	Ala	Asp	Ala	Val	Gln	Asn	His	Val	Lys	Ser	Leu	Asn	Trp	
		115					120					125				
Gly	His	Arg	Ile	Gln	Leu	Gln	Asp	Arg	Lys	Val	Lys	Tyr	Phe	Asn	Val	
	130					135					140					
Lys	Ala	Ser	Phe	Val	Asp	Thr	His	Thr	Val	Cys	Gly	Val	Ser	Lys	Gly	
145					150					155					160	
Gly	Glu	Glu	Thr	Leu	Leu	Ser	Ala	Glu	His	Ile	Val	Ile	Ala	Thr	Gly	
				165					170					175		
Gly	Arg	Pro	Arg	Tyr	Pro	Thr	His	Ile	Glu	Gly	Ala	Leu	Glu	Tyr	Gly	
			180					185					190			
Ile	Thr	Ser	Asp	Asp	Leu	Phe	Trp	Leu	Lys	Glu	Ser	Pro	Gly	Lys	Thr	
		195					200					205				
Leu	Val	Val	Gly	Ala	Ser	Tyr	Val	Ala	Leu	Glu	Cys	Ala	Gly	Leu	Leu	
	210					215					220					
Thr	Gly	Leu	Gly	Leu	Asp	Thr	Thr	Val	Met	Ile	Arg	Ser	Val	Pro	Leu	
225					230					235					240	
Arg	Ala	Phe	Asp	Gln	Gln	Met	Ala	Ser	Leu	Val	Thr	Glu	His	Met	Ala	

Gly	His	Gly	Thr	Arg	Ile	Leu	Arg	Gly	Cys	Ala	Pro	Glu	Lys	Val	Glu
			245						250						255
Lys	Leu	Pro	Gly	Gln	Gln	Leu	Arg	Val	Thr	Trp	Val	Asp	Leu	Thr	Ser
		260						265					270		
Asp	Arg	Lys	Asp	Ala	Gly	Thr	Phe	Asp	Thr	Val	Leu	Trp	Ala	Ile	Gly
	275					280						285			
Arg	Val	Pro	Glu	Thr	Ala	Ser	Leu	Asn	Leu	Glu	Lys	Ala	Gly	Val	His
	290				295					300					305
Thr	Asn	Pro	Val	Thr	Gly	Lys	Ile	Leu	Val	Asp	Ala	Gln	Glu	Thr	Thr
			310						315						320
Ser	Val	Pro	His	Ile	Tyr	Ala	Ile	Gly	Asp	Val	Ala	Glu	Gly	Arg	Pro
		325						330						335	
Glu	Leu	Thr	Pro	Thr	Ala	Ile	Met	Ala	Gly	Arg	Leu	Leu	Ala	Gln	Arg
	340						345					350			
Leu	Ser	Gly	Arg	Thr	Ser	Asp	Leu	Met	Asp	Tyr	Ser	Ser	Val	Pro	Thr
	355					360					365				
Thr	Val	Phe	Thr	Pro	Leu	Glu	Tyr	Gly	Cys	Val	Gly	Leu	Ser	Glu	Glu
	370					375					380				385
Ala	Ala	Val	Ala	Arg	His	Gly	Glu	Glu	His	Val	Glu	Val	Tyr	His	Ala
			405						410					415	
Phe	Tyr	Lys	Pro	Leu	Glu	Phe	Thr	Val	Pro	Gln	Arg	Asp	Ala	Ser	Gln
		420						425					430		
Cys	Tyr	Ile	Lys	Met	Val	Cys	Leu	Arg	Glu	Pro	Pro	Gln	Leu	Val	Leu
	435					440						445			
Gly	Leu	His	Phe	Leu	Gly	Pro	Asn	Ala	Gly	Glu	Val	Ile	Gln	Gly	Phe
	450				455					460					
Ala	Leu	Gly	Ile	Lys	Cys	Gly	Ala	Ser	Tyr	Gln	Gln	Leu	Met	Arg	Thr
	465				470				475					480	
Val	Gly	Ile	His	Pro	Thr	Cys	Ala	Glu	Glu	Val	Ala	Lys	Leu	Arg	Ile
			485					490						495	
Ser	Lys	Arg	Ser	Gly	Leu	Asp	Pro	Thr	Val	Thr	Gly	Cys	Cys	Gly	
		500						505					510		

<210> 287  
 <211> 525  
 <212> PRT  
 <213> Caenorhabditis elegans

<220>  
 <221> VARIANT  
 <222> 524  
 <223> Xaa = Any Amino Acid

<400> 287

Met	Tyr	Ile	Lys	Gly	Asn	Ala	Val	Gly	Gly	Leu	Lys	Glu	Leu	Lys	Ala
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		20						25					30		
Leu	Ile	Val	Ile	Gly	Gly	Gly	Ser	Gly	Gly	Leu	Ala	Ala	Ala	Lys	Glu
		35				40						45			
Ala	Ser	Arg	Leu	Gly	Lys	Lys	Val	Ala	Cys	Leu	Asp	Phe	Val	Lys	Pro
	50					55				60					
Ser	Pro	Gln	Gly	Thr	Ser	Trp	Gly	Leu	Gly	Gly	Thr	Cys	Val	Asn	Val
	65				70				75					80	
Gly	Cys	Ile	Pro	Lys	Lys	Leu	Met	His	Gln	Ala	Ser	Leu	Leu	Gly	His
			85					90						95	
Ser	Ile	His	Asp	Ala	Lys	Lys	Tyr	Gly	Trp	Lys	Leu	Pro	Glu	Gly	Lys
		100					105					110			
Val	Glu	His	Gln	Trp	Asn	His	Leu	Arg	Asp	Ser	Val	Gln	Asp	His	Ile
		115				120						125			
Ala	Ser	Leu	Asn	Trp	Gly	Tyr	Arg	Val	Gln	Leu	Arg	Glu	Lys	Thr	Val
	130					135					140				
Thr	Tyr	Ile	Asn	Ser	Tyr	Gly	Glu	Phe	Thr	Gly	Pro	Phe	Glu	Ile	Ser
	145				150					155				160	
Ala	Thr	Asn	Lys	Lys	Lys	Lys	Val	Glu	Lys	Leu	Thr	Ala	Asp	Arg	Phe



Leu	Ile	Ser	Thr	165	Gly	Leu	Arg	Pro	Lys	170	Tyr	Pro	Glu	Ile	Pro	175	Gly	Val
			180						185						190			
Lys	Glu	Tyr	Thr	Ile	Thr	Ser	Asp	Asp	Leu	Phe	Gln	Leu	Pro	Tyr	Ser			
		195					200					205						
Pro	Gly	Lys	Thr	Leu	Cys	Val	Gly	Ala	Ser	Tyr	Val	Ser	Leu	Glu	Cys			
	210					215					220							
Ala	Gly	Phe	Leu	His	Gly	Phe	Gly	Phe	Asp	Val	Thr	Val	Met	Val	Arg			
225					230					235					240			
Ser	Ile	Leu	Leu	Arg	Gly	Phe	Asp	Gln	Asp	Met	Ala	Glu	Arg	Ile	Arg			
				245					250					255				
Lys	His	Met	Ile	Ala	Tyr	Gly	Met	Lys	Phe	Glu	Ala	Gly	Val	Pro	Thr			
			260					265					270					
Arg	Ile	Glu	Gln	Ile	Asp	Glu	Lys	Thr	Asp	Glu	Lys	Ala	Gly	Lys	Tyr			
		275					280					285						
Arg	Val	Phe	Trp	Pro	Lys	Lys	Asn	Glu	Glu	Thr	Gly	Glu	Met	Gln	Glu			
	290					295					300							
Val	Ser	Glu	Glu	Tyr	Asn	Thr	Ile	Leu	Met	Ala	Ile	Gly	Arg	Glu	Ala			
305					310					315					320			
Val	Thr	Asp	Asp	Val	Gly	Leu	Thr	Thr	Ile	Gly	Val	Glu	Arg	Ala	Lys			
			325						330					335				
Ser	Lys	Lys	Val	Leu	Gly	Arg	Arg	Glu	Gln	Ser	Thr	Thr	Ile	Pro	Trp			
			340					345					350					
Val	Tyr	Ala	Ile	Gly	Asp	Val	Leu	Glu	Gly	Thr	Pro	Glu	Leu	Thr	Pro			
		355					360					365						
Val	Ala	Ile	Gln	Ala	Gly	Arg	Val	Leu	Met	Arg	Arg	Ile	Phe	Asp	Gly			
	370					375					380							
Ala	Asn	Glu	Leu	Thr	Glu	Tyr	Asp	Gln	Ile	Pro	Thr	Thr	Val	Phe	Thr			
385					390					395					400			
Pro	Leu	Glu	Tyr	Gly	Cys	Cys	Gly	Leu	Ser	Glu	Glu	Asp	Ala	Met	Met			
			405					410					415					
Lys	Tyr	Gly	Lys	Asp	Asn	Ile	Ile	Ile	Tyr	His	Asn	Val	Phe	Asn	Pro			
			420					425					430					
Leu	Glu	Tyr	Thr	Ile	Ser	Glu	Arg	Met	Asp	Lys	Asp	His	Cys	Tyr	Leu			
		435					440					445						
Lys	Met	Ile	Cys	Leu	Arg	Asn	Glu	Glu	Glu	Lys	Val	Val	Gly	Phe	His			
	450					455					460							
Ile	Leu	Thr	Pro	Asn	Ala	Gly	Glu	Val	Thr	Gln	Gly	Phe	Gly	Ile	Ala			
465					470					475					480			
Leu	Lys	Leu	Ala	Ala	Lys	Lys	Ala	Asp	Phe	Asp	Arg	Leu	Ile	Gly	Ile			
			485					490					495					
His	Pro	Thr	Val	Ala	Glu	Asn	Phe	Thr	Thr	Leu	Thr	Leu	Glu	Lys	Lys			
			500					505					510					
Glu	Gly	Asp	Glu	Glu	Leu	Gln	Ala	Ser	Gly	Cys	Xaa	Gly						
		515					520					525						

<210> 288  
 <211> 667  
 <212> PRT  
 <213> Caenorhabditis elegans

<220>  
 <221> VARIANT  
 <222> 666  
 <223> Xaa = Any Amino Acid

<400> 288  
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 Gln Gln Glu Ala Ser Ser Pro Ala Asn Pro His Val Ser Asp Thr Leu  
 20 25 30  
 Ser Met Gly Val Ala Ala Ser Gly Met Pro Pro Pro Lys Arg Pro Ala  
 35 40 45  
 Pro Ala Glu Ser Pro Thr Leu Pro Gly Glu Thr Leu Val Asp Ala Pro  
 50 55 60  
 Gly Ile Pro Leu Lys Glu Ala Leu Lys Glu Ala Ala Asn Ser Lys Ile

65	Val	Ile	Phe	Tyr	Asn	Ser	Ser	Asp	Glu	Glu	Lys	Gln	Leu	Val	Glu	Phe
					85					90					95	
	Glu	Thr	Tyr	Leu	Asn	Ser	Leu	Lys	Glu	Pro	Ala	Asp	Ala	Glu	Lys	Pro
				100					105					110		
	Leu	Glu	Ile	Pro	Glu	Ile	Lys	Lys	Leu	Gln	Val	Ser	Arg	Ala	Ser	Gln
			115					120					125			
	Lys	Val	Ile	Gln	Tyr	Leu	Thr	Leu	His	Thr	Ser	Trp	Pro	Leu	Met	Tyr
		130					135					140				
	Ile	Lys	Gly	Asn	Ala	Val	Gly	Gly	Leu	Lys	Glu	Leu	Lys	Ala	Leu	Lys
	145					150					155				160	
	Gln	Asp	Tyr	Leu	Lys	Glu	Trp	Leu	Arg	Asp	His	Thr	Tyr	Asp	Leu	Ile
				165						170					175	
	Val	Ile	Gly	Gly	Gly	Ser	Gly	Gly	Leu	Ala	Ala	Ala	Lys	Glu	Ala	Ser
			180						185					190		
	Arg	Leu	Gly	Lys	Lys	Val	Ala	Cys	Leu	Asp	Phe	Val	Lys	Pro	Ser	Pro
		195						200					205			
	Gln	Gly	Thr	Ser	Trp	Gly	Leu	Gly	Gly	Thr	Cys	Val	Asn	Val	Gly	Cys
		210				215						220				
	Ile	Pro	Lys	Lys	Leu	Met	His	Gln	Ala	Ser	Leu	Leu	Gly	His	Ser	Ile
	225					230					235				240	
	His	Asp	Ala	Lys	Lys	Tyr	Gly	Trp	Lys	Leu	Pro	Glu	Gly	Lys	Val	Glu
				245						250					255	
	His	Gln	Trp	Asn	His	Leu	Arg	Asp	Ser	Val	Gln	Asp	His	Ile	Ala	Ser
			260					265						270		
	Leu	Asn	Trp	Gly	Tyr	Arg	Val	Gln	Leu	Arg	Glu	Lys	Thr	Val	Thr	Tyr
		275						280					285			
	Ile	Asn	Ser	Tyr	Gly	Glu	Phe	Thr	Gly	Pro	Phe	Glu	Ile	Ser	Ala	Thr
		290				295						300				
	Asn	Lys	Lys	Lys	Lys	Val	Glu	Lys	Leu	Thr	Ala	Asp	Arg	Phe	Leu	Ile
	305					310					315				320	
	Ser	Thr	Gly	Leu	Arg	Pro	Lys	Tyr	Pro	Glu	Ile	Pro	Gly	Val	Lys	Glu
				325						330					335	
	Tyr	Thr	Ile	Thr	Ser	Asp	Asp	Leu	Phe	Gln	Leu	Pro	Tyr	Ser	Pro	Gly
			340						345					350		
	Lys	Thr	Leu	Cys	Val	Gly	Ala	Ser	Tyr	Val	Ser	Leu	Glu	Cys	Ala	Gly
			355					360					365			
	Phe	Leu	His	Gly	Phe	Gly	Phe	Asp	Val	Thr	Val	Met	Val	Arg	Ser	Ile
		370				375						380				
	Leu	Leu	Arg	Gly	Phe	Asp	Gln	Asp	Met	Ala	Glu	Arg	Ile	Arg	Lys	His
	385					390					395				400	
	Met	Ile	Ala	Tyr	Gly	Met	Lys	Phe	Glu	Ala	Gly	Val	Pro	Thr	Arg	Ile
				405						410					415	
	Glu	Gln	Ile	Asp	Glu	Lys	Thr	Asp	Glu	Lys	Ala	Gly	Lys	Tyr	Arg	Val
			420						425					430		
	Phe	Trp	Pro	Lys	Lys	Asn	Glu	Glu	Thr	Gly	Glu	Met	Gln	Glu	Val	Ser
			435				440						445			
	Glu	Glu	Tyr	Asn	Thr	Ile	Leu	Met	Ala	Ile	Gly	Arg	Glu	Ala	Val	Thr
		450				455					460					
	Asp	Asp	Val	Gly	Leu	Thr	Thr	Ile	Gly	Val	Glu	Arg	Ala	Lys	Ser	Lys
	465					470					475				480	
	Lys	Val	Leu	Gly	Arg	Arg	Glu	Gln	Ser	Thr	Thr	Ile	Pro	Trp	Val	Tyr
				485						490					495	
	Ala	Ile	Gly	Asp	Val	Leu	Glu	Gly	Thr	Pro	Glu	Leu	Thr	Pro	Val	Ala
			500						505					510		
	Ile	Gln	Ala	Gly	Arg	Val	Leu	Met	Arg	Arg	Ile	Phe	Asp	Gly	Ala	Asn
			515					520					525			
	Glu	Leu	Thr	Glu	Tyr	Asp	Gln	Ile	Pro	Thr	Thr	Val	Phe	Thr	Pro	Leu
		530					535					540				
	Glu	Tyr	Gly	Cys	Cys	Gly	Leu	Ser	Glu	Glu	Asp	Ala	Met	Met	Lys	Tyr
	545					550					555				560	
	Gly	Lys	Asp	Asn	Ile	Ile	Ile	Tyr	His	Asn	Val	Phe	Asn	Pro	Leu	Glu
				565						570					575	
	Tyr	Thr	Ile	Ser	Glu	Arg	Met	Asp	Lys	Asp	His	Cys	Tyr	Leu	Lys	Met
			580						585					590		
	Ile	Cys	Leu	Arg	Asn	Glu	Glu	Glu	Lys	Val	Val	Gly	Phe	His	Ile	Leu
			595					600					605			

Thr	Pro	Asn	Ala	Gly	Glu	Val	Thr	Gln	Gly	Phe	Gly	Ile	Ala	Leu	Lys
	610					615					620				
Leu	Ala	Ala	Lys	Lys	Ala	Asp	Phe	Asp	Arg	Leu	Ile	Gly	Ile	His	Pro
625					630					635					640
Thr	Val	Ala	Glu	Asn	Phe	Thr	Thr	Leu	Thr	Leu	Glu	Lys	Lys	Glu	Gly
				645					650					655	
Asp	Glu	Glu	Leu	Gln	Ala	Ser	Gly	Cys	Xaa	Gly					
			660					665							

<210> 289

<211> 516

<212> PRT

<213> *Drosophila melanogaster*

<400> 289

Met	Ser	Thr	Ile	Lys	Phe	Leu	Arg	Ser	Ser	Thr	His	Asn	Ala	Leu	Arg
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Ser	Ser	Leu	Gly	Trp	Cys	Arg	Leu	Ala	Ala	Ser	Arg	Pro	Arg	Tyr	Asp
			20					25					30		
Tyr	Asp	Leu	Val	Val	Leu	Gly	Gly	Gly	Ser	Ala	Gly	Leu	Ala	Cys	Ala
		35					40					45			
Lys	Glu	Ala	Ala	Gly	Cys	Gly	Ala	Arg	Val	Leu	Cys	Phe	Asp	Tyr	Val
	50					55					60				
Lys	Pro	Thr	Pro	Val	Gly	Thr	Lys	Trp	Gly	Ile	Gly	Gly	Thr	Cys	Val
65					70					75				80	
Asn	Val	Gly	Cys	Ile	Pro	Lys	Lys	Leu	Met	His	Gln	Ala	Ser	Leu	Leu
				85					90					95	
Gly	Glu	Ala	Val	His	Glu	Ala	Val	Ala	Tyr	Gly	Trp	Asn	Val	Asp	Asp
			100					105					110		
Thr	Asn	Ile	Arg	Pro	Asp	Trp	Arg	Lys	Leu	Val	Arg	Ser	Val	Gln	Asn
		115					120						125		
His	Ile	Lys	Ser	Val	Asn	Trp	Val	Thr	Arg	Val	Asp	Leu	Arg	Asp	Lys
	130					135					140				
Lys	Val	Glu	Tyr	Val	Asn	Ser	Met	Ala	Thr	Phe	Arg	Asp	Ser	His	Thr
145					150					155					160
Ile	Glu	Tyr	Val	Ala	Met	Pro	Gly	Ala	Glu	His	Arg	Gln	Val	Thr	Ser
				165					170					175	
Glu	Tyr	Val	Val	Val	Ala	Val	Gly	Gly	Arg	Pro	Arg	Tyr	Pro	Asp	Ile
			180					185					190		
Pro	Gly	Ala	Val	Glu	Leu	Gly	Ile	Thr	Ser	Asp	Asp	Ile	Phe	Ser	Tyr
		195					200					205			
Glu	Arg	Glu	Pro	Gly	Arg	Thr	Leu	Val	Val	Gly	Ala	Gly	Tyr	Val	Gly
	210					215					220				
Leu	Glu	Cys	Ala	Cys	Phe	Leu	Lys	Gly	Leu	Gly	Tyr	Glu	Pro	Thr	Val
225					230					235					240
Met	Val	Arg	Ser	Ile	Val	Leu	Arg	Gly	Phe	Asp	Arg	Gln	Met	Ser	Glu
				245					250					255	
Leu	Leu	Ala	Ala	Met	Met	Thr	Glu	Arg	Gly	Ile	Pro	Phe	Leu	Gly	Thr
			260					265					270		
Thr	Ile	Pro	Lys	Ala	Val	Glu	Arg	Gln	Ala	Asp	Gly	Arg	Leu	Leu	Val
		275					280					285			
Arg	Tyr	Arg	Asn	Thr	Thr	Thr	Gln	Met	Asp	Gly	Ser	Asp	Val	Phe	Asp
	290					295					300				
Thr	Val	Leu	Trp	Ala	Ile	Gly	Arg	Lys	Gly	Leu	Ile	Glu	Asp	Leu	Asn
305					310					315					320
Leu	Asp	Ala	Ala	Gly	Val	Lys	Thr	His	Asp	Asp	Lys	Ile	Val	Val	Asp
				325					330					335	
Ala	Ala	Glu	Ala	Thr	Ser	Val	Pro	His	Ile	Phe	Ala	Val	Gly	Asp	Ile
			340					345					350		
Ile	Tyr	Gly	Arg	Pro	Glu	Leu	Thr	Pro	Val	Ala	Ile	Leu	Ser	Gly	Arg
	355						360					365			
Leu	Leu	Ala	Arg	Arg	Leu	Phe	Ala	Gly	Ser	Thr	Gln	Leu	Met	Asp	Tyr
	370					375					380				
Ala	Asp	Val	Ala	Thr	Thr	Val	Phe	Thr	Pro	Leu	Glu	Tyr	Ser	Cys	Val
385					390					395					400
Gly	Met	Ser	Glu	Glu	Thr	Ala	Ile	Glu	Leu	Arg	Gly	Ala	Asp	Asn	Ile

				405					410					415			
Glu	Val	Phe	His	Gly	Tyr	Tyr	Lys	Pro	Thr	Glu	Phe	Phe	Ile	Pro	Gln		
			420					425						430			
Lys	Ser	Val	Arg	His	Cys	Tyr	Leu	Lys	Ala	Val	Ala	Glu	Val	Ser	Gly		
		435					440						445				
Asp	Gln	Lys	Ile	Leu	Gly	Leu	His	Tyr	Ile	Gly	Pro	Val	Ala	Gly	Glu		
	450					455					460						
Val	Ile	Gln	Gly	Phe	Ala	Ala	Ala	Leu	Lys	Thr	Gly	Leu	Thr	Val	Lys		
	465				470					475					480		
Thr	Leu	Leu	Asn	Thr	Val	Gly	Ile	His	Pro	Thr	Thr	Ala	Glu	Glu	Phe		
			485						490					495			
Thr	Arg	Leu	Ser	Ile	Thr	Lys	Arg	Ser	Gly	Arg	Asp	Pro	Thr	Pro	Ala		
		500						505					510				
Ser	Cys	Cys	Ser														
		515															

<210> 290  
 <211> 524  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> VARIANT  
 <222> 523  
 <223> Xaa = Any Amino Acid

<400>	290																
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1				5					10					15			
Trp	Arg	Thr	Gln	Ala	Val	Ala	Gly	Gly	Val	Arg	Gly	Ala	Ala	Arg	Gly		
			20					25					30				
Ala	Ala	Ala	Gly	Gln	Arg	Asp	Tyr	Asp	Leu	Leu	Val	Val	Gly	Gly	Gly		
		35					40					45					
Ser	Gly	Gly	Leu	Ala	Cys	Ala	Lys	Glu	Ala	Ala	Gln	Leu	Gly	Arg	Lys		
	50				55					60							
Val	Ser	Val	Val	Asp	Tyr	Val	Glu	Pro	Ser	Pro	Gln	Gly	Thr	Arg	Trp		
	65			70					75					80			
Gly	Leu	Gly	Gly	Thr	Cys	Val	Asn	Val	Gly	Cys	Ile	Pro	Lys	Lys	Leu		
			85					90					95				
Met	His	Gln	Ala	Ala	Leu	Leu	Gly	Gly	Leu	Ile	Gln	Asp	Ala	Pro	Asn		
		100					105					110					
Tyr	Gly	Trp	Glu	Val	Ala	Gln	Pro	Val	Pro	His	Asp	Trp	Arg	Lys	Met		
		115				120						125					
Ala	Glu	Ala	Val	Gln	Asn	His	Val	Lys	Ser	Leu	Asn	Trp	Gly	His	Arg		
	130				135						140						
Val	Gln	Leu	Gln	Asp	Arg	Lys	Val	Lys	Tyr	Phe	Asn	Ile	Lys	Ala	Ser		
	145			150					155					160			
Phe	Val	Asp	Glu	His	Thr	Val	Cys	Gly	Val	Ala	Lys	Gly	Gly	Lys	Glu		
			165					170					175				
Ile	Leu	Leu	Ser	Ala	Asp	His	Ile	Ile	Ile	Ala	Thr	Gly	Gly	Arg	Pro		
		180					185					190					
Arg	Tyr	Pro	Thr	His	Ile	Glu	Gly	Ala	Leu	Glu	Tyr	Gly	Ile	Thr	Ser		
		195				200						205					
Asp	Asp	Ile	Phe	Trp	Leu	Lys	Glu	Ser	Pro	Gly	Lys	Thr	Leu	Val	Val		
	210				215						220						
Gly	Ala	Ser	Tyr	Val	Ala	Leu	Glu	Cys	Ala	Gly	Phe	Leu	Thr	Gly	Ile		
	225			230					235					240			
Gly	Leu	Asp	Thr	Thr	Ile	Met	Met	Arg	Ser	Ile	Pro	Leu	Arg	Gly	Phe		
			245					250					255				
Asp	Gln	Gln	Met	Ser	Ser	Met	Val	Ile	Glu	His	Met	Ala	Ser	His	Gly		
		260					265					270					
Thr	Arg	Phe	Leu	Arg	Gly	Cys	Ala	Pro	Ser	Arg	Val	Arg	Arg	Leu	Pro		
		275				280						285					
Asp	Gly	Gln	Leu	Gln	Val	Thr	Trp	Glu	Asp	Ser	Thr	Thr	Gly	Lys	Glu		
	290				295						300						
Asp	Thr	Gly	Thr	Phe	Asp	Thr	Val	Leu	Trp	Ala	Ile	Gly	Arg	Val	Pro		

305	Asp	Thr	Arg	Ser	Leu	Asn	Leu	Glu	Lys	Ala	Gly	Val	Asp	Thr	Ser	Pro
					325					330					335	
Asp	Thr	Gln	Lys	Ile	Leu	Val	Asp	Ser	Arg	Glu	Ala	Thr	Ser	Val	Pro	
			340					345					350			
His	Ile	Tyr	Ala	Ile	Gly	Asp	Val	Val	Glu	Gly	Arg	Pro	Glu	Leu	Thr	
		355				360						365				
Pro	Ile	Ala	Ile	Met	Ala	Gly	Arg	Leu	Leu	Val	Gln	Arg	Leu	Phe	Gly	
	370					375					380					
Gly	Ser	Ser	Asp	Leu	Met	Asp	Tyr	Asp	Asn	Val	Pro	Thr	Thr	Val	Phe	
385					390					395				400		
Thr	Pro	Leu	Glu	Tyr	Gly	Cys	Val	Gly	Leu	Ser	Glu	Glu	Glu	Ala	Val	
				405					410					415		
Ala	Arg	His	Gly	Gln	Glu	His	Val	Glu	Val	Tyr	His	Ala	His	Tyr	Lys	
			420					425					430			
Pro	Leu	Glu	Phe	Thr	Val	Ala	Gly	Arg	Asp	Ala	Ser	Gln	Cys	Tyr	Val	
		435					440					445				
Lys	Met	Val	Cys	Leu	Arg	Glu	Pro	Pro	Gln	Leu	Val	Leu	Gly	Leu	His	
	450					455					460					
Phe	Leu	Gly	Pro	Asn	Ala	Gly	Glu	Val	Thr	Gln	Gly	Phe	Ala	Leu	Gly	
465					470					475				480		
Ile	Lys	Cys	Gly	Ala	Ser	Tyr	Ala	Gln	Val	Met	Arg	Thr	Val	Gly	Ile	
				485					490					495		
His	Pro	Thr	Cys	Ser	Glu	Glu	Val	Val	Lys	Leu	Arg	Ile	Ser	Lys	Arg	
			500					505					510			
Ser	Gly	Leu	Asp	Pro	Thr	Val	Thr	Gly	Cys	Xaa	Gly					
		515					520									

<210> 291  
 <211> 497  
 <212> PRT  
 <213> Homo sapiens

<400> 291	Met	Asn	Gly	Pro	Glu	Asp	Leu	Pro	Lys	Ser	Tyr	Asp	Tyr	Asp	Leu	Ile
1					5				10					15		
Ile	Ile	Gly	Gly	Gly	Ser	Gly	Gly	Leu	Ala	Ala	Ala	Lys	Glu	Ala	Ala	
			20					25					30			
Gln	Tyr	Gly	Lys	Lys	Val	Met	Val	Leu	Asp	Phe	Val	Thr	Pro	Thr	Pro	
		35					40					45				
Leu	Gly	Thr	Arg	Trp	Gly	Leu	Gly	Gly	Thr	Cys	Val	Asn	Val	Gly	Cys	
	50				55					60						
Ile	Pro	Lys	Lys	Leu	Met	His	Gln	Ala	Ala	Leu	Leu	Gly	Gln	Ala	Leu	
65					70				75					80		
Gln	Asp	Ser	Arg	Asn	Tyr	Gly	Trp	Lys	Val	Glu	Glu	Thr	Val	Lys	His	
				85					90					95		
Asp	Trp	Asp	Arg	Met	Ile	Glu	Ala	Val	Gln	Asn	His	Ile	Gly	Ser	Leu	
			100					105					110			
Asn	Trp	Gly	Tyr	Arg	Val	Ala	Leu	Arg	Glu	Lys	Lys	Val	Val	Tyr	Glu	
		115					120					125				
Asn	Ala	Tyr	Gly	Gln	Phe	Ile	Gly	Pro	His	Arg	Ile	Lys	Ala	Thr	Asn	
	130					135					140					
Asn	Lys	Gly	Lys	Glu	Lys	Ile	Tyr	Ser	Ala	Glu	Arg	Phe	Leu	Ile	Ala	
145					150					155				160		
Thr	Gly	Glu	Arg	Pro	Arg	Tyr	Leu	Gly	Ile	Pro	Gly	Asp	Lys	Glu	Tyr	
				165					170					175		
Cys	Ile	Ser	Ser	Asp	Asp	Leu	Phe	Ser	Leu	Pro	Tyr	Cys	Pro	Gly	Lys	
			180					185					190			
Thr	Leu	Val	Val	Gly	Ala	Ser	Tyr	Val	Ala	Leu	Glu	Cys	Ala	Gly	Phe	
		195					200					205				
Leu	Ala	Gly	Ile	Gly	Leu	Asn	Val	Thr	Val	Met	Val	Arg	Ser	Ile	Leu	
	210					215					220					
Leu	Arg	Gly	Phe	Asp	Gln	Asp	Met	Ala	Asn	Lys	Ile	Gly	Glu	His	Met	
225					230					235				240		
Glu	Glu	His	Gly	Ile	Lys	Phe	Ile	Arg	Gln	Phe	Val	Pro	Ile	Lys	Val	
				245					250					255		

Glu	Gln	Ile	Glu	Ala	Gly	Thr	Pro	Gly	Arg	Leu	Arg	Val	Val	Ala	Gln	
			260					265					270			
Ser	Thr	Asn	Ser	Glu	Glu	Ile	Ile	Glu	Gly	Glu	Tyr	Asn	Thr	Val	Met	
		275					280					285				
Leu	Ala	Ile	Gly	Arg	Asp	Ala	Cys	Thr	Arg	Lys	Ile	Gly	Leu	Glu	Thr	
		290			295					300						
Val	Gly	Val	Lys	Ile	Asn	Glu	Lys	Thr	Gly	Lys	Ile	Pro	Val	Thr	Asp	
305					310					315					320	
Glu	Glu	Gln	Thr	Asn	Val	Pro	Tyr	Ile	Tyr	Ala	Ile	Gly	Asp	Ile	Leu	
				325					330					335		
Glu	Asp	Lys	Val	Glu	Leu	Thr	Pro	Val	Ala	Ile	Gln	Ala	Gly	Arg	Leu	
			340					345					350			
Leu	Ala	Gln	Arg	Leu	Tyr	Ala	Gly	Ser	Thr	Val	Lys	Cys	Asp	Tyr	Glu	
		355					360					365				
Asn	Val	Pro	Thr	Thr	Val	Phe	Thr	Pro	Leu	Glu	Tyr	Gly	Ala	Cys	Gly	
		370				375					380					
Leu	Ser	Glu	Glu	Lys	Ala	Val	Glu	Lys	Phe	Gly	Glu	Glu	Asn	Ile	Glu	
385					390					395					400	
Val	Tyr	His	Ser	Tyr	Phe	Trp	Pro	Leu	Glu	Trp	Thr	Ile	Pro	Ser	Arg	
				405					410					415		
Asp	Asn	Asn	Lys	Cys	Tyr	Ala	Lys	Ile	Ile	Cys	Asn	Thr	Lys	Asp	Asn	
			420					425					430			
Glu	Arg	Val	Val	Gly	Phe	His	Val	Leu	Gly	Pro	Asn	Ala	Gly	Glu	Val	
		435					440					445				
Thr	Gln	Gly	Phe	Ala	Ala	Ala	Leu	Lys	Cys	Gly	Leu	Thr	Lys	Lys	Gln	
		450				455					460					
Leu	Asp	Ser	Thr	Ile	Gly	Ile	His	Pro	Val	Cys	Ala	Glu	Val	Phe	Thr	
465					470					475					480	
Thr	Leu	Ser	Val	Thr	Lys	Arg	Ser	Gly	Ala	Arg	Ile	Leu	Gln	Ala	Gly	
				485					490					495		

Cys

<210> 292  
 <211> 497  
 <212> PRT  
 <213> Homo sapien

<400> 292

Met	Asn	Gly	Pro	Glu	Asp	Leu	Pro	Lys	Ser	Tyr	Asp	Tyr	Asp	Leu	Ile	
1				5				10					15			
Ile	Ile	Gly	Gly	Gly	Ser	Gly	Gly	Leu	Ala	Ala	Ala	Lys	Glu	Pro	Ala	
			20					25					30			
Gln	Tyr	Gly	Lys	Lys	Val	Met	Val	Leu	Asp	Phe	Gly	Thr	Pro	Thr	Pro	
		35					40					45				
Leu	Gly	Thr	Arg	Trp	Gly	Leu	Gly	Gly	Thr	Cys	Val	Asn	Val	Gly	Cys	
	50				55					60						
Ile	Pro	Lys	Lys	Leu	Met	His	Gln	Ala	Ala	Leu	Leu	Gly	Gln	Ala	Leu	
65				70						75					80	
Gln	Asp	Ser	Arg	Asn	Tyr	Gly	Trp	Lys	Val	Glu	Glu	Thr	Val	Lys	His	
				85					90					95		
Asp	Trp	Asp	Arg	Met	Ile	Glu	Ala	Val	Gln	Asn	His	Ile	Gly	Ser	Leu	
			100					105					110			
Asn	Trp	Gly	Tyr	Arg	Val	Ala	Leu	Arg	Glu	Lys	Lys	Val	Val	Tyr	Glu	
		115					120					125				
Asn	Ala	Tyr	Gly	Gln	Phe	Ile	Gly	Pro	His	Arg	Ile	Lys	Ala	Thr	Asn	
		130				135					140					
Asn	Lys	Gly	Lys	Glu	Lys	Ile	Tyr	Ser	Ala	Glu	Arg	Phe	Leu	Ile	Ala	
145				150						155					160	
Thr	Gly	Glu	Arg	Pro	Arg	Tyr	Leu	Gly	Ile	Pro	Gly	Asp	Lys	Glu	Tyr	
				165				170						175		
Cys	Ile	Ser	Ser	Asp	Asp	Leu	Phe	Ser	Leu	Pro	Tyr	Cys	Pro	Gly	Lys	
		180						185					190			
Thr	Leu	Val	Val	Gly	Ala	Ser	Tyr	Val	Ala	Leu	Glu	Cys	Ala	Gly	Phe	
		195					200					205				
Leu	Ala	Gly	Ile	Gly	Leu	Asp	Val	Thr	Val	Met	Val	Arg	Ser	Ile	Leu	

210	215	220
Leu Arg Gly Phe Asp Gln	Asp Met Ala Asn Lys	Ile Gly Glu His Met
225	230	235
Glu Glu His Gly Ile Lys	Phe Ile Arg Gln Phe	Val Pro Ile Lys Val
245	250	255
Glu Gln Ile Glu Ala Gly	Thr Pro Gly Arg Leu	Arg Val Val Ala Gln
260	265	270
Ser Thr Asn Ser Glu Glu	Ile Ile Glu Gly Glu	Tyr Asn Thr Val Met
275	280	285
Leu Ala Ile Gly Arg Asp	Ala Cys Thr Arg Lys	Ile Gly Leu Glu Thr
290	295	300
Val Gly Val Lys Ile Asn	Glu Lys Thr Gly Lys	Ile Pro Val Thr Asp
305	310	315
Glu Glu Gln Thr Asn Val	Pro Tyr Ile Tyr Ala	Ile Gly Asp Ile Leu
325	330	335
Glu Asp Lys Val Glu Leu	Thr Pro Val Ala Ile	Gln Ala Gly Arg Leu
340	345	350
Leu Ala Gln Arg Leu Tyr	Ala Gly Ser Thr Val	Lys Cys Asp Tyr Glu
355	360	365
Asn Val Pro Thr Thr Val	Phe Thr Pro Leu Glu	Tyr Gly Ala Cys Gly
370	375	380
Leu Ser Glu Glu Lys Ala	Val Glu Lys Phe Gly	Glu Glu Asn Ile Glu
385	390	395
Val Tyr His Ser Tyr Phe	Trp Pro Leu Glu Trp	Thr Ile Pro Ser Arg
405	410	415
Asp Asn Asn Lys Cys Tyr	Ala Lys Ile Cys Asn	Thr Lys Asp Asn
420	425	430
Glu Arg Val Val Gly Phe	His Val Leu Gly Pro	Asn Ala Gly Glu Val
435	440	445
Thr Gln Gly Phe Ala Ala	Ala Leu Lys Cys Gly	Leu Thr Lys Lys Gln
450	455	460
Leu Asp Ser Thr Ile Gly	Ile His Pro Val Cys	Ala Glu Val Phe Thr
465	470	475
Thr Leu Ser Val Thr Lys	Arg Ser Gly Ala Ser	Ile Leu Gln Ala Gly
485	490	495

Cys

<210> 293  
 <211> 521  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> VARIANT  
 <222> 520  
 <223> Xaa = Any Amino Acid

<400> 293

Met	Ala	Val	Ala	Leu	Arg	Gly	Leu	Gly	Gly	Arg	Phe	Arg	Trp	Arg	Thr
1				5					10					15	
Gln	Ala	Val	Ala	Gly	Gly	Val	Arg	Gly	Ala	Ala	Arg	Gly	Ala	Ala	Ala
			20					25					30		
Gly	Gln	Arg	Asp	Tyr	Asp	Leu	Leu	Val	Val	Gly	Gly	Gly	Ser	Gly	Gly
		35				40						45			
Leu	Ala	Cys	Ala	Lys	Glu	Ala	Gln	Leu	Gly	Arg	Lys	Val	Ala	Val	
	50					55				60					
Val	Asp	Tyr	Val	Glu	Pro	Ser	Pro	Gln	Gly	Thr	Arg	Trp	Gly	Leu	Gly
65					70					75				80	
Gly	Thr	Cys	Val	Asn	Val	Gly	Cys	Ile	Pro	Lys	Lys	Leu	Met	His	Gln
			85						90					95	
Ala	Ala	Leu	Leu	Gly	Gly	Leu	Ile	Gln	Asp	Ala	Pro	Asn	Tyr	Gly	Trp
			100					105					110		
Glu	Val	Ala	Gln	Pro	Val	Pro	His	Asp	Trp	Arg	Lys	Met	Ala	Glu	Ala
		115					120					125			
Val	Gln	Asn	His	Val	Lys	Ser	Leu	Asn	Trp	Gly	His	Arg	Val	Gln	Leu

130						135						140				
Gln	Asp	Arg	Lys	Val	Lys	Tyr	Phe	Asn	Ile	Lys	Ala	Ser	Phe	Val	Asp	
145					150					155					160	
Glu	His	Thr	Val	Cys	Gly	Val	Ala	Lys	Gly	Gly	Lys	Glu	Ile	Leu	Leu	
				165					170					175		
Ser	Ala	Asp	His	Ile	Ile	Ile	Ala	Thr	Gly	Gly	Arg	Pro	Arg	Tyr	Pro	
			180					185					190			
Thr	His	Ile	Glu	Gly	Ala	Leu	Glu	Tyr	Gly	Ile	Thr	Ser	Asp	Asp	Ile	
		195					200					205				
Phe	Trp	Leu	Lys	Glu	Ser	Pro	Gly	Lys	Thr	Leu	Val	Val	Gly	Ala	Ser	
	210					215					220					
Tyr	Val	Ala	Leu	Glu	Cys	Ala	Gly	Phe	Leu	Thr	Gly	Ile	Gly	Leu	Asp	
225					230					235					240	
Thr	Thr	Ile	Met	Met	Arg	Ser	Ile	Pro	Leu	Arg	Gly	Phe	Asp	Gln	Gln	
				245					250					255		
Met	Ser	Ser	Met	Val	Ile	Glu	His	Met	Ala	Ser	His	Gly	Thr	Arg	Phe	
			260					265					270			
Leu	Arg	Gly	Cys	Ala	Pro	Ser	Arg	Val	Arg	Arg	Leu	Pro	Asp	Gly	Gln	
		275					280					285				
Leu	Gln	Val	Thr	Trp	Glu	Asp	Ser	Thr	Thr	Gly	Lys	Glu	Asp	Thr	Gly	
	290					295					300					
Thr	Phe	Asp	Thr	Val	Leu	Trp	Ala	Ile	Gly	Arg	Val	Pro	Asp	Thr	Arg	
305					310					315					320	
Ser	Leu	Asn	Leu	Glu	Lys	Ala	Gly	Val	Asp	Thr	Ser	Pro	Asp	Thr	Gln	
				325					330					335		
Lys	Ile	Leu	Val	Asp	Ser	Arg	Glu	Ala	Thr	Ser	Val	Pro	His	Ile	Tyr	
			340					345					350			
Ala	Ile	Gly	Asp	Val	Val	Glu	Gly	Arg	Pro	Glu	Leu	Thr	Pro	Ile	Ala	
		355					360					365				
Ile	Met	Ala	Gly	Arg	Leu	Leu	Val	Gln	Arg	Leu	Phe	Gly	Gly	Ser	Ser	
	370					375					380					
Asp	Leu	Met	Asp	Tyr	Asp	Asn	Val	Pro	Thr	Thr	Val	Phe	Thr	Pro	Leu	
385					390					395					400	
Glu	Tyr	Gly	Cys	Val	Gly	Leu	Ser	Glu	Glu	Glu	Ala	Val	Ala	Arg	His	
				405					410					415		
Gly	Gln	Glu	His	Val	Glu	Val	Tyr	His	Ala	His	Tyr	Lys	Pro	Leu	Glu	
			420					425					430			
Phe	Thr	Val	Ala	Gly	Arg	Asp	Ala	Ser	Gln	Cys	Tyr	Val	Lys	Met	Val	
		435					440					445				
Cys	Leu	Arg	Glu	Pro	Pro	Gln	Leu	Val	Leu	Gly	Leu	His	Phe	Leu	Gly	
	450					455					460					
Pro	Asn	Ala	Gly	Glu	Val	Thr	Gln	Gly	Phe	Ala	Leu	Gly	Ile	Lys	Cys	
465					470					475					480	
Gly	Ala	Ser	Tyr	Ala	Gln	Val	Met	Arg	Thr	Val	Gly	Ile	His	Pro	Thr	
				485					490					495		
Cys	Ser	Glu	Glu	Val	Val	Lys	Leu	Arg	Ile	Ser	Lys	Arg	Ser	Gly	Leu	
			500					505					510			
Asp	Pro	Thr	Val	Thr	Gly	Cys	Xaa	Gly								
		515					520									

<210> 294  
 <211> 579  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> VARIANT  
 <222> 578  
 <223> Xaa = Any Amino Acid

<400> 294  
 Ala Glu Arg Val Val Ile Phe Ser Lys Ser Tyr Cys Pro His Ser Thr  
 1 5 10 15  
 Arg Val Lys Glu Leu Phe Ser Ser Leu Gly Val Glu Cys Asn Val Leu  
 20 25 30  
 Glu Leu Asp Gln Val Asp Asp Gly Ala Arg Val Gln Glu Val Leu Ser





Cys Xaa Gly

<210> 295  
 <211> 524  
 <212> PRT  
 <213> Homo sapien

<220>  
 <221> VARIANT  
 <222> 523  
 <223> Xaa = Any Amino Acid

<400> 295  
 Met Ala Ala Met Ala Val Ala Leu Arg Gly Leu Gly Gly Arg Phe Arg  
 1 5 10 15  
 Trp Arg Thr Gln Ala Val Ala Gly Gly Val Arg Gly Ala Ala Arg Gly  
 20 25 30  
 Ala Ala Ala Gly Gln Arg Asp Tyr Asp Leu Leu Val Val Gly Gly Gly  
 35 40 45  
 Ser Gly Gly Leu Ala Cys Ala Lys Glu Ala Ala Gln Leu Gly Arg Lys  
 50 55 60  
 Val Ala Val Val Asp Tyr Val Glu Pro Ser Pro Gln Gly Thr Arg Trp  
 65 70 75 80  
 Gly Leu Gly Gly Thr Cys Val Asn Val Gly Cys Ile Pro Lys Lys Leu  
 85 90 95  
 Met His Gln Ala Ala Leu Leu Gly Gly Leu Ile Gln Asp Ala Pro Asn  
 100 105 110  
 Tyr Gly Trp Glu Val Ala Gln Pro Val Pro His Asp Trp Arg Lys Met  
 115 120 125  
 Ala Glu Ala Val Gln Asn His Val Lys Ser Leu Asn Trp Gly His Arg  
 130 135 140  
 Val Gln Leu Gln Asp Arg Lys Val Lys Tyr Phe Asn Ile Lys Ala Ser  
 145 150 155 160  
 Phe Val Asp Glu His Thr Val Cys Gly Val Ala Lys Gly Gly Lys Glu  
 165 170 175  
 Ile Leu Leu Ser Ala Asp His Ile Ile Ala Thr Gly Gly Arg Pro  
 180 185 190  
 Arg Tyr Pro Thr His Ile Glu Gly Ala Leu Glu Tyr Gly Ile Thr Ser  
 195 200 205  
 Asp Asp Ile Phe Trp Leu Lys Glu Ser Pro Gly Lys Thr Leu Val Val  
 210 215 220  
 Gly Ala Ser Tyr Val Ala Leu Glu Cys Ala Gly Phe Leu Thr Gly Ile  
 225 230 235 240  
 Gly Leu Asp Thr Thr Ile Met Met Arg Ser Ile Pro Leu Arg Gly Phe  
 245 250 255  
 Asp Gln Gln Met Ser Ser Met Val Ile Glu His Met Ala Ser His Gly  
 260 265 270  
 Thr Arg Phe Leu Arg Gly Cys Ala Pro Ser Arg Val Arg Arg Leu Pro  
 275 280 285  
 Asp Gly Gln Leu Gln Val Thr Trp Glu Asp Ser Thr Thr Gly Lys Glu  
 290 295 300  
 Asp Thr Gly Thr Phe Asp Thr Val Leu Trp Ala Ile Gly Arg Val Pro  
 305 310 315 320  
 Asp Thr Arg Ser Leu Asn Leu Glu Lys Ala Gly Val Asp Thr Ser Pro  
 325 330 335  
 Asp Thr Gln Lys Ile Leu Val Asp Ser Arg Glu Ala Thr Ser Val Pro  
 340 345 350  
 His Ile Tyr Ala Ile Gly Asp Val Val Glu Gly Arg Pro Glu Leu Thr  
 355 360 365  
 Pro Ile Ala Ile Met Ala Gly Arg Leu Leu Val Gln Arg Leu Phe Gly  
 370 375 380  
 Gly Ser Ser Asp Leu Met Asp Tyr Asp Asn Val Pro Thr Thr Val Phe  
 385 390 395 400  
 Thr Pro Leu Glu Tyr Gly Cys Val Gly Leu Ser Glu Glu Glu Ala Val  
 405 410 415

Ala	Arg	His	Gly	Gln	Glu	His	Val	Glu	Val	Tyr	His	Ala	His	Tyr	Lys
			420					425					430		
Pro	Leu	Glu	Phe	Thr	Val	Ala	Gly	Arg	Asp	Ala	Ser	Gln	Cys	Tyr	Val
		435					440					445			
Lys	Met	Val	Cys	Leu	Arg	Glu	Pro	Pro	Gln	Leu	Val	Leu	Gly	Leu	His
	450					455					460				
Phe	Leu	Gly	Pro	Asn	Ala	Gly	Glu	Val	Thr	Gln	Gly	Phe	Ala	Leu	Gly
465					470					475					480
Ile	Lys	Cys	Gly	Ala	Ser	Tyr	Ala	Gln	Val	Met	Arg	Thr	Val	Gly	Ile
			485						490					495	
His	Pro	Thr	Cys	Ser	Glu	Glu	Val	Val	Lys	Leu	Arg	Ile	Ser	Lys	Arg
			500					505					510		
Ser	Gly	Leu	Asp	Pro	Thr	Val	Thr	Gly	Cys	Xaa	Gly				
		515					520								

<210> 296

<211> 577

<212> PRT

<213> Homo sapien

<220>

<221> VARIANT

<222> 576

<223> Xaa = Any Amino Acid

<400> 296

Arg	Val	Val	Ile	Phe	Ser	Lys	Ser	Tyr	Cys	Pro	His	Ser	Thr	Arg	Val
1				5					10					15	
Lys	Glu	Leu	Phe	Ser	Ser	Leu	Gly	Val	Glu	Cys	Asn	Val	Leu	Glu	Leu
			20					25					30		
Asp	Gln	Val	Asp	Asp	Gly	Ala	Arg	Val	Gln	Glu	Val	Leu	Ser	Glu	Ile
		35					40					45			
Thr	Asn	Gln	Lys	Thr	Val	Pro	Asn	Ile	Phe	Val	Asn	Lys	Val	His	Val
	50					55					60				
Gly	Gly	Cys	Asp	Gln	Thr	Phe	Gln	Ala	Tyr	Gln	Ser	Gly	Leu	Leu	Gln
65				70					75					80	
Lys	Leu	Leu	Gln	Glu	Asp	Leu	Ala	Tyr	Asp	Tyr	Asp	Leu	Ile	Ile	Ile
			85					90					95		
Gly	Gly	Gly	Ser	Gly	Gly	Leu	Ser	Cys	Ala	Lys	Glu	Ala	Ala	Ile	Leu
			100					105					110		
Gly	Lys	Lys	Val	Met	Val	Leu	Asp	Phe	Val	Val	Pro	Ser	Pro	Gln	Gly
		115					120					125			
Thr	Ser	Trp	Gly	Leu	Gly	Gly	Thr	Cys	Val	Asn	Val	Gly	Cys	Ile	Pro
	130					135					140				
Lys	Lys	Leu	Met	His	Gln	Ala	Ala	Leu	Leu	Gly	Gln	Ala	Leu	Cys	Asp
145					150					155				160	
Ser	Arg	Lys	Phe	Gly	Trp	Glu	Tyr	Asn	Gln	Gln	Val	Arg	His	Asn	Trp
			165					170						175	
Glu	Thr	Met	Thr	Lys	Ala	Ile	Gln	Asn	His	Ile	Ser	Ser	Leu	Asn	Trp
		180					185						190		
Gly	Tyr	Arg	Leu	Ser	Leu	Arg	Glu	Lys	Ala	Val	Ala	Tyr	Val	Asn	Ser
		195					200					205			
Tyr	Gly	Glu	Phe	Val	Glu	His	His	Lys	Ile	Lys	Ala	Thr	Asn	Lys	Lys
	210					215					220				
Gly	Gln	Glu	Thr	Tyr	Tyr	Thr	Ala	Ala	Gln	Phe	Val	Ile	Ala	Thr	Gly
225					230					235				240	
Glu	Arg	Pro	Arg	Tyr	Leu	Gly	Ile	Gln	Gly	Asp	Lys	Glu	Tyr	Cys	Ile
			245						250					255	
Thr	Ser	Asp	Asp	Leu	Phe	Ser	Leu	Pro	Tyr	Cys	Pro	Gly	Lys	Pro	Leu
		260						265					270		
Val	Val	Gly	Ala	Ser	Tyr	Val	Ala	Leu	Glu	Cys	Ala	Gly	Phe	Leu	Ala
		275					280					285			
Gly	Phe	Gly	Leu	Asp	Val	Thr	Val	Met	Val	Arg	Ser	Ile	Leu	Leu	Arg
	290					295					300				
Gly	Phe	Asp	Gln	Glu	Met	Ala	Glu	Lys	Val	Gly	Ser	Tyr	Met	Glu	Gln
305					310					315					320

His Gly Val Lys Phe Leu Arg Lys Phe Ile Pro Val Met Val Gln Gln  
 325 330 335  
 Leu Glu Lys Gly Ser Pro Gly Lys Leu Lys Val Leu Ala Lys Ser Thr  
 340 345 350  
 Glu Gly Thr Glu Thr Ile Glu Gly Val Tyr Asn Thr Val Leu Leu Ala  
 355 360 365  
 Ile Gly Arg Asp Ser Cys Thr Arg Lys Ile Gly Leu Glu Lys Ile Gly  
 370 375 380  
 Val Lys Ile Asn Glu Lys Ser Gly Lys Ile Pro Val Asn Asp Val Glu  
 385 390 395 400  
 Gln Thr Asn Val Pro Tyr Val Tyr Ala Val Gly Asp Ile Leu Glu Asp  
 405 410 415  
 Lys Pro Glu Leu Thr Pro Val Ala Ile Gln Ser Gly Lys Leu Leu Ala  
 420 425 430  
 Gln Arg Leu Phe Gly Ala Ser Leu Glu Lys Cys Asp Tyr Ile Asn Val  
 435 440 445  
 Pro Thr Thr Val Phe Thr Pro Leu Glu Tyr Gly Cys Cys Gly Leu Ser  
 450 455 460  
 Glu Glu Lys Ala Ile Glu Val Tyr Lys Lys Glu Asn Leu Glu Ile Tyr  
 465 470 475 480  
 His Thr Leu Phe Trp Pro Leu Glu Trp Thr Val Ala Gly Arg Glu Asn  
 485 490 495  
 Asn Thr Cys Tyr Ala Lys Ile Ile Cys Asn Lys Phe Asp His Asp Arg  
 500 505 510  
 Val Ile Gly Phe His Ile Leu Gly Pro Asn Ala Gly Glu Val Thr Gln  
 515 520 525  
 Gly Phe Ala Ala Ala Met Lys Cys Gly Leu Thr Lys Gln Leu Leu Asp  
 530 535 540  
 Asp Thr Ile Gly Ile His Pro Thr Cys Gly Glu Val Phe Thr Thr Leu  
 545 550 555 560  
 Glu Ile Thr Lys Ser Ser Gly Leu Asp Ile Thr Gln Lys Gly Cys Xaa  
 565 570 575  
 Gly

<210> 297  
 <211> 494  
 <212> PRT  
 <213> Homo sapien

<400> 297  
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 Gly Gly Ser Gly Gly Leu Ala Cys Ala Lys Glu Ala Ala Gln Leu Gly  
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 Arg Lys Val Ala Val Val Asp Tyr Val Glu Pro Ser Pro Gln Gly Thr  
 35 40 45  
 Arg Trp Gly Leu Gly Gly Thr Cys Val Asn Val Gly Cys Ile Pro Lys  
 50 55 60  
 Lys Leu Met His Gln Ala Ala Leu Leu Gly Gly Leu Ile Gln Asp Ala  
 65 70 75 80  
 Pro Asn Tyr Gly Trp Glu Val Ala Gln Pro Val Pro His Asp Trp Arg  
 85 90 95  
 Lys Met Ala Glu Ala Val Gln Asn His Val Lys Ser Leu Asn Trp Gly  
 100 105 110  
 His Arg Val Gln Leu Gln Asp Arg Lys Val Lys Tyr Phe Asn Ile Lys  
 115 120 125  
 Ala Ser Phe Val Asp Glu His Thr Val Cys Gly Val Ala Lys Gly Gly  
 130 135 140  
 Lys Glu Ile Leu Leu Ser Ala Asp His Ile Ile Ile Ala Thr Gly Gly  
 145 150 155 160  
 Arg Pro Arg Tyr Pro Thr His Ile Glu Gly Ala Leu Glu Tyr Gly Ile  
 165 170 175  
 Thr Ser Asp Asp Ile Phe Trp Leu Lys Glu Ser Pro Gly Lys Thr Leu  
 180 185 190  
 Val Val Gly Ala Ser Tyr Val Ala Leu Glu Cys Ala Gly Phe Leu Thr



Leu	Leu	Ser	Ala	Asp	His	Ile	Ile	Ile	Ala	Thr	Gly	Gly	Arg	Pro	Arg
			180					185					190		
Tyr	Pro	Thr	His	Ile	Glu	Gly	Ala	Leu	Glu	Tyr	Gly	Ile	Thr	Ser	Asp
		195					200					205			
Asp	Ile	Phe	Trp	Leu	Lys	Glu	Ser	Pro	Gly	Lys	Thr	Leu	Val	Val	Gly
	210					215					220				
Ala	Ser	Tyr	Val	Ala	Leu	Glu	Cys	Ala	Gly	Phe	Leu	Thr	Gly	Ile	Gly
225					230				235					240	
Leu	Asp	Thr	Thr	Ile	Met	Met	Arg	Ser	Ile	Pro	Leu	Arg	Gly	Phe	Asp
				245					250					255	
Gln	Gln	Met	Ser	Ser	Met	Val	Ile	Glu	His	Met	Ala	Ser	His	Gly	Thr
		260						265					270		
Arg	Phe	Leu	Arg	Gly	Cys	Ala	Pro	Ser	Arg	Val	Lys	Arg	Leu	Pro	Asp
		275					280					285			
Gly	Gln	Leu	Gln	Val	Thr	Trp	Glu	Asp	Ser	Thr	Thr	Gly	Lys	Glu	Asp
	290					295					300				
Thr	Gly	Thr	Phe	Asp	Thr	Val	Leu	Trp	Ala	Ile	Gly	Arg	Val	Pro	Asp
305					310					315				320	
Thr	Arg	Ser	Leu	Asn	Leu	Glu	Lys	Ala	Gly	Val	Asp	Thr	Ser	Pro	Asp
				325					330					335	
Thr	Gln	Lys	Ile	Leu	Val	Asp	Ser	Arg	Glu	Ala	Thr	Ser	Val	Pro	His
		340						345					350		
Ile	Tyr	Ala	Ile	Gly	Asp	Val	Val	Glu	Gly	Arg	Pro	Glu	Leu	Thr	Pro
		355					360					365			
Thr	Ala	Ile	Met	Ala	Gly	Arg	Leu	Leu	Val	Gln	Arg	Leu	Phe	Gly	Gly
	370					375				380					
Ser	Ser	Asp	Leu	Met	Asp	Tyr	Asp	Asn	Val	Pro	Thr	Thr	Val	Phe	Thr
385					390					395				400	
Pro	Leu	Glu	Tyr	Gly	Cys	Val	Gly	Leu	Ser	Glu	Glu	Glu	Ala	Val	Ala
				405				410						415	
Arg	His	Gly	Gln	Glu	His	Val	Glu	Val	Tyr	His	Ala	His	Tyr	Lys	Pro
			420					425					430		
Leu	Glu	Phe	Thr	Val	Ala	Gly	Arg	Asp	Ala	Ser	Gln	Cys	Tyr	Val	Lys
		435					440					445			
Met	Val	Cys	Leu	Arg	Glu	Pro	Pro	Gln	Leu	Val	Leu	Gly	Leu	His	Phe
	450					455					460				
Leu	Gly	Pro	Asn	Ala	Gly	Glu	Val	Thr	Gln	Gly	Phe	Ala	Leu	Gly	Ile
465					470					475				480	
Lys	Cys	Gly	Ala	Ser	Tyr	Ala	Gln	Val	Met	Arg	Thr	Val	Gly	Ile	His
				485					490					495	
Pro	Thr	Cys	Ser	Glu	Glu	Val	Val	Lys	Leu	Arg	Ile	Ser	Lys	Arg	Ser
			500					505					510		
Gly	Leu	Asp	Pro	Thr	Val	Thr	Gly	Cys							
		515					520								

<210> 299  
 <211> 549  
 <212> PRT  
 <213> Homo sapien

<400> 299

Met	Ser	Cys	Glu	Asp	Gly	Arg	Ala	Leu	Glu	Gly	Thr	Leu	Ser	Glu	Leu
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Ala	Ala	Glu	Thr	Asp	Leu	Pro	Val	Val	Phe	Val	Lys	Gln	Arg	Lys	Ile
			20					25					30		
Gly	Gly	His	Gly	Pro	Thr	Leu	Lys	Ala	Tyr	Gln	Glu	Gly	Arg	Leu	Gln
		35					40					45			
Lys	Leu	Leu	Lys	Met	Asn	Gly	Pro	Glu	Asp	Leu	Pro	Lys	Ser	Tyr	Asp
	50					55					60				
Tyr	Asp	Leu	Ile	Ile	Ile	Gly	Gly	Gly	Ser	Gly	Gly	Leu	Ala	Ala	Ala
65					70					75				80	
Lys	Glu	Ala	Ala	Gln	Tyr	Gly	Lys	Lys	Val	Met	Val	Leu	Asp	Phe	Val
				85					90					95	
Thr	Pro	Thr	Pro	Leu	Gly	Thr	Arg	Trp	Gly	Leu	Gly	Gly	Thr	Cys	Val
			100					105					110		
Asn	Val	Gly	Cys	Ile	Pro	Lys	Lys	Leu	Met	His	Gln	Ala	Ala	Leu	Leu



<400> 300

Met	Pro	Val	Asp	Asp	Cys	Trp	Leu	Tyr	Phe	Pro	Ala	Ser	Arg	Gly	Arg
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Thr	Phe	Val	Gln	Thr	Val	Trp	Val	Ala	Pro	Thr	Cys	Pro	Asn	Cys	Cys
			20					25					30		
Trp	Phe	Pro	Gly	Phe	Leu	Pro	Pro	Val	Pro	Arg	Pro	Pro	His	Val	Pro
		35					40					45			
Arg	Val	Leu	Leu	Arg	Gly	Pro	Arg	Gly	Ala	Val	Leu	Pro	Ala	Ser	Arg
	50					55					60				
Pro	Ser	Lys	Thr	Leu	Pro	Ser	Ser	Ser	Gln	Thr	Pro	Cys	Pro	Thr	Asp
65					70					75					80
Pro	Cys	Ile	Cys	Pro	Pro	Ser	Thr	Pro	Asp	Ser	Arg	Gln	Glu	Lys	
				85					90				95		
Asn	Thr	Gln	Ser	Glu	Leu	Pro	Asn	Lys	Lys	Gly	Gln	Leu	Gln	Lys	Leu
			100					105					110		
Pro	Thr	Met	Asn	Gly	Ser	Lys	Asp	Pro	Pro	Gly	Ser	Tyr	Asp	Phe	Asp
	115						120					125			
Leu	Ile	Ile	Ile	Gly	Gly	Gly	Ser	Gly	Gly	Leu	Ala	Ala	Ala	Lys	Glu
	130					135					140				
Ala	Ala	Lys	Phe	Asp	Lys	Lys	Val	Leu	Val	Leu	Asp	Phe	Val	Thr	Pro
145					150					155					160
Thr	Pro	Leu	Gly	Thr	Arg	Trp	Gly	Leu	Gly	Gly	Thr	Cys	Val	Asn	Val
				165					170					175	
Gly	Cys	Ile	Pro	Lys	Lys	Leu	Met	His	Gln	Ala	Ala	Leu	Leu	Gly	Gln
			180					185					190		
Ala	Leu	Lys	Asp	Ser	Arg	Asn	Tyr	Gly	Trp	Lys	Val	Glu	Asp	Thr	Val
	195						200					205			
Lys	His	Asp	Trp	Glu	Lys	Met	Thr	Glu	Ser	Val	Gln	Ser	His	Ile	Gly
	210					215					220				
Ser	Leu	Asn	Trp	Gly	Tyr	Arg	Val	Ala	Leu	Arg	Glu	Lys	Lys	Val	Val
225					230					235					240
Tyr	Glu	Asn	Ala	Tyr	Gly	Arg	Phe	Ile	Gly	Pro	His	Arg	Ile	Val	Ala
				245					250					255	
Thr	Asn	Asn	Lys	Gly	Lys	Glu	Lys	Ile	Tyr	Ser	Ala	Glu	Arg	Phe	Leu
			260					265					270		
Ile	Ala	Thr	Gly	Glu	Arg	Pro	Arg	Tyr	Leu	Gly	Ile	Pro	Gly	Asp	Lys
	275						280					285			
Glu	Tyr	Cys	Ile	Ser	Ser	Asp	Asp	Leu	Phe	Ser	Leu	Pro	Tyr	Cys	Pro
	290					295					300				
Gly	Lys	Thr	Leu	Val	Val	Gly	Ala	Ser	Tyr	Val	Ala	Leu	Glu	Cys	Ala
305					310					315					320
Gly	Phe	Leu	Ala	Gly	Ile	Gly	Leu	Asp	Val	Thr	Val	Met	Val	Arg	Ser
				325					330					335	
Ile	Leu	Leu	Arg	Gly	Phe	Asp	Gln	Asp	Met	Ala	Asn	Lys	Ile	Gly	Glu
			340					345					350		
His	Met	Glu	Glu	His	Gly	Ile	Lys	Phe	Ile	Arg	Gln	Phe	Val	Pro	Thr
	355						360					365			
Lys	Ile	Glu	Gln	Ile	Glu	Ala	Gly	Thr	Pro	Gly	Arg	Leu	Arg	Val	Thr
	370					375					380				
Ala	Gln	Ser	Thr	Asn	Ser	Glu	Glu	Thr	Ile	Glu	Gly	Glu	Phe	Asn	Thr
385					390					395					400
Val	Leu	Leu	Ala	Val	Gly	Arg	Asp	Ser	Cys	Thr	Arg	Thr	Ile	Gly	Leu
				405					410					415	
Glu	Thr	Val	Gly	Val	Lys	Ile	Asn	Glu	Lys	Thr	Gly	Lys	Ile	Pro	Val
			420					425					430		
Thr	Asp	Glu	Glu	Gln	Thr	Asn	Val	Pro	Tyr	Ile	Tyr	Ala	Ile	Gly	Asp
	435						440					445			
Ile	Leu	Glu	Gly	Lys	Leu	Glu	Leu	Thr	Pro	Val	Ala	Ile	Gln	Ala	Gly
	450					455					460				
Arg	Leu	Leu	Ala	Gln	Arg	Leu	Tyr	Gly	Gly	Ser	Asn	Val	Lys	Cys	Asp
465					470					475					480
Tyr	Asp	Asn	Val	Pro	Thr	Thr	Val	Phe	Thr	Pro	Leu	Glu	Tyr	Gly	Cys
				485					490					495	
Cys	Gly	Leu	Ser	Glu	Glu	Lys	Ala	Val	Glu	Lys	Phe	Gly	Glu	Glu	Asn
			500					505					510		
Ile	Glu	Val	Tyr	His	Ser	Phe	Phe	Trp	Pro	Leu	Glu	Trp	Thr	Val	Pro
		515					520					525			



Ser	Arg	Asp	Asn	Asn	Lys	Cys	Tyr	Ala	Lys	Ile	Ile	Cys	Asn	Leu	Lys
530						535					540				
Asp	Asp	Glu	Arg	Val	Val	Gly	Phe	His	Val	Leu	Gly	Pro	Asn	Ala	Gly
545					550					555					560
Glu	Val	Thr	Gln	Gly	Phe	Ala	Ala	Ala	Leu	Lys	Cys	Gly	Leu	Thr	Lys
				565					570					575	
Gln	Gln	Leu	Asp	Ser	Thr	Ile	Gly	Ile	His	Pro	Val	Cys	Ala	Glu	Ile
			580					585					590		
Phe	Thr	Thr	Leu	Ser	Val	Thr	Lys	Arg	Ser	Gly	Gly	Asp	Ile	Leu	Gln
	595						600					605			
Ser	Gly	Cys	Xaa	Gly											
610															

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 <211> 310  
 <212> PRT  
 <213> Mus musculus

<400> 301															
Met	Asn	Gly	Ser	Lys	Asp	Pro	Pro	Gly	Ser	Tyr	Asp	Phe	Asp	Leu	Ile
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Ile	Ile	Gly	Gly	Gly	Ser	Gly	Gly	Leu	Ala	Ala	Ala	Lys	Glu	Ala	Ala
			20					25					30		
Lys	Phe	Asp	Lys	Lys	Val	Leu	Val	Leu	Asp	Phe	Val	Thr	Pro	Thr	Pro
	35						40					45			
Leu	Gly	Thr	Arg	Trp	Gly	Leu	Gly	Gly	Thr	Cys	Val	Asn	Val	Gly	Cys
50						55					60				
Ile	Pro	Lys	Lys	Leu	Met	His	Gln	Ala	Ala	Leu	Leu	Gly	Gln	Ala	Leu
65					70					75					80
Lys	Asp	Ser	Arg	Asn	Tyr	Gly	Trp	Lys	Val	Glu	Asp	Thr	Val	Lys	His
				85					90					95	
Asp	Trp	Glu	Lys	Met	Thr	Glu	Ser	Val	Gln	Ser	His	Ile	Gly	Ser	Leu
			100					105					110		
Asn	Trp	Gly	Tyr	Arg	Val	Ala	Leu	Arg	Glu	Lys	Lys	Val	Val	Tyr	Glu
		115					120					125			
Asn	Ala	Tyr	Gly	Arg	Phe	Ile	Gly	Pro	His	Arg	Ile	Val	Ala	Thr	Asn
	130					135					140				
Asn	Lys	Gly	Lys	Glu	Lys	Ile	Tyr	Ser	Ala	Glu	Arg	Phe	Leu	Ile	Ala
145					150					155					160
Thr	Gly	Glu	Arg	Pro	Arg	Tyr	Leu	Gly	Ile	Pro	Gly	Asp	Lys	Glu	Tyr
				165					170					175	
Cys	Ile	Ser	Ser	Asp	Asp	Leu	Phe	Ser	Leu	Pro	Tyr	Cys	Pro	Gly	Lys
			180					185					190		
Thr	Leu	Val	Val	Gly	Ala	Ser	Tyr	Val	Ala	Leu	Glu	Cys	Ala	Gly	Phe
	195						200					205			
Leu	Ala	Gly	Ile	Gly	Leu	Asp	Val	Thr	Val	Met	Val	Arg	Ser	Ile	Leu
	210					215					220				
Leu	Arg	Gly	Phe	Asp	Gln	Asp	Met	Ala	Asn	Lys	Ile	Gly	Glu	His	Met
225					230					235					240
Glu	Glu	His	Gly	Ile	Lys	Phe	Ile	Arg	Gln	Phe	Val	Pro	Thr	Lys	Ile
				245					250					255	
Glu	Gln	Ile	Glu	Ala	Gly	Thr	Pro	Gly	Arg	Leu	Arg	Val	Thr	Ala	Gln
			260					265					270		
Ser	Thr	Asn	Ser	Glu	Glu	Thr	Ile	Glu	Gly	Glu	Phe	Asn	Thr	Val	Leu
		275					280					285			
Leu	Ala	Val	Gly	Arg	Asp	Ser	Cys	Thr	Arg	Thr	Ile	Gly	Leu	Glu	Thr
	290					295					300				
Val	Gly	Val	Lys	Ile	Asn										
305					310										

<210> 302  
 <211> 613  
 <212> PRT  
 <213> Mus musculus

<400> 302

Met	Ser	Ser	Pro	Pro	Gly	Arg	Arg	Ala	Arg	Leu	Ala	Ser	Pro	Gly	Thr
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Ser	Arg	Pro	Ser	Ser	Glu	Ala	Arg	Glu	Glu	Leu	Arg	Arg	Arg	Leu	Arg
		20						25					30		
Asp	Leu	Ile	Glu	Gly	Asn	Arg	Val	Met	Ile	Phe	Ser	Lys	Ser	Tyr	Cys
		35					40					45			
Pro	His	Ser	Thr	Arg	Val	Lys	Glu	Leu	Phe	Ser	Ser	Leu	Gly	Val	Val
	50					55					60				
Tyr	Asn	Ile	Leu	Glu	Leu	Asp	Gln	Val	Asp	Asp	Gly	Ala	Ser	Val	Gln
65					70					75					80
Glu	Val	Leu	Thr	Glu	Ile	Ser	Asn	Gln	Lys	Thr	Val	Pro	Asn	Ile	Phe
				85					90					95	
Val	Asn	Lys	Val	His	Val	Gly	Gly	Cys	Asp	Arg	Thr	Phe	Gln	Ala	His
			100					105					110		
Gln	Asn	Gly	Leu	Leu	Gln	Lys	Leu	Leu	Gln	Asp	Asp	Ser	Ala	His	Asp
		115					120					125			
Tyr	Asp	Leu	Ile	Ile	Ile	Gly	Gly	Gly	Ser	Gly	Gly	Leu	Ser	Cys	Ala
	130					135					140				
Lys	Glu	Ala	Ala	Asn	Leu	Gly	Lys	Lys	Val	Met	Val	Leu	Asp	Phe	Val
145					150					155					160
Val	Pro	Ser	Pro	Gln	Gly	Thr	Thr	Trp	Gly	Leu	Gly	Gly	Thr	Cys	Val
				165					170					175	
Asn	Val	Gly	Cys	Ile	Pro	Lys	Lys	Leu	Met	His	Gln	Ala	Ala	Leu	Leu
			180					185					190		
Gly	His	Ala	Leu	Gln	Asp	Ala	Lys	Lys	Tyr	Gly	Trp	Glu	Tyr	Asn	Gln
	195						200					205			
Gln	Val	Lys	His	Asn	Trp	Glu	Ala	Met	Thr	Glu	Ala	Ile	Gln	Ser	His
	210					215					220				
Ile	Gly	Ser	Leu	Asn	Trp	Gly	Tyr	Arg	Val	Thr	Leu	Arg	Glu	Lys	Gly
225					230					235					240
Val	Thr	Tyr	Val	Asn	Ser	Phe	Gly	Glu	Phe	Val	Asp	Leu	His	Lys	Ile
				245					250					255	
Lys	Ala	Thr	Asn	Lys	Lys	Gly	Gln	Glu	Thr	Phe	Tyr	Thr	Ala	Ser	Lys
			260					265					270		
Phe	Val	Ile	Ala	Thr	Gly	Glu	Arg	Pro	Arg	Tyr	Leu	Gly	Ile	Gln	Gly
	275						280					285			
Asp	Lys	Glu	Tyr	Cys	Ile	Thr	Ser	Asp	Asp	Leu	Phe	Ser	Leu	Pro	Tyr
	290					295					300				
Cys	Pro	Gly	Cys	Thr	Leu	Val	Val	Gly	Ala	Ser	Tyr	Val	Gly	Leu	Glu
305					310					315					320
Cys	Ala	Gly	Phe	Leu	Ala	Gly	Leu	Gly	Leu	Asp	Val	Thr	Val	Met	Val
				325					330					335	
Arg	Ser	Val	Leu	Leu	Arg	Gly	Phe	Asp	Gln	Glu	Met	Ala	Glu	Lys	Val
			340					345					350		
Gly	Ser	Tyr	Leu	Glu	Gln	Gln	Gly	Val	Lys	Phe	Gln	Arg	Lys	Phe	Thr
		355					360					365			
Pro	Ile	Leu	Val	Gln	Gln	Leu	Glu	Lys	Gly	Leu	Pro	Gly	Lys	Leu	Lys
	370					375					380				
Val	Val	Ala	Lys	Ser	Thr	Glu	Gly	Pro	Glu	Thr	Val	Glu	Gly	Ile	Tyr
385					390					395					400
Asn	Thr	Val	Leu	Leu	Ala	Ile	Gly	Arg	Asp	Ser	Cys	Thr	Arg	Lys	Ile
				405					410					415	
Gly	Leu	Glu	Lys	Ile	Gly	Val	Lys	Ile	Asn	Glu	Lys	Asn	Gly	Lys	Ile
			420					425					430		
Pro	Val	Asn	Asp	Val	Glu	Gln	Thr	Asn	Val	Pro	His	Val	Tyr	Ala	Ile
		435					440					445			
Gly	Asp	Ile	Leu	Asp	Gly	Lys	Pro	Glu	Leu	Thr	Pro	Val	Ala	Ile	Gln
	450					455					460				
Ala	Gly	Lys	Leu	Leu	Ala	Arg	Arg	Leu	Phe	Gly	Val	Ser	Leu	Glu	Lys
465					470					475					480
Cys	Asp	Tyr	Ile	Asn	Ile	Pro	Thr	Thr	Val	Phe	Thr	Pro	Leu	Glu	Tyr
				485					490					495	
Gly	Cys	Cys	Gly	Leu	Ser	Glu	Glu	Lys	Ala	Ile	Glu	Met	Tyr	Lys	Lys
			500					505					510		
Glu	Asn	Leu	Glu	Val	Tyr	His	Thr	Leu	Phe	Trp	Pro	Leu	Glu	Trp	Thr
		515					520					525			

Val	Ala	Gly	Arg	Asp	Asn	Asn	Thr	Cys	Tyr	Ala	Lys	Ile	Ile	Cys	Asn
	530					535					540				
Lys	Phe	Asp	Asn	Glu	Arg	Val	Val	Gly	Phe	His	Leu	Leu	Gly	Pro	Asn
545					550					555					560
Ala	Gly	Glu	Ile	Thr	Gln	Gly	Phe	Ala	Ala	Ala	Met	Lys	Cys	Gly	Leu
				565					570					575	
Thr	Lys	Gln	Leu	Leu	Asp	Asp	Thr	Ile	Gly	Ile	His	Pro	Thr	Cys	Gly
			580					585					590		
Glu	Val	Phe	Thr	Thr	Leu	Glu	Ile	Thr	Lys	Ser	Ser	Gly	Leu	Asp	Ile
		595					600					605			
Thr	Gln	Lys	Gly	Cys											
	610														

<210> 303  
 <211> 524  
 <212> PRT  
 <213> Mus musculus

<220>  
 <221> VARIANT  
 <222> 523  
 <223> Xaa = Any Amino Acid

<400>	303														
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Arg	Pro	Arg	Thr	Arg	Ala	Leu	Thr	Arg	Gly	Thr	Arg	Gly	Ala	Ala	Ser
			20					25					30		
Ala	Ala	Gly	Gly	Gln	Gln	Ser	Phe	Asp	Leu	Leu	Val	Ile	Gly	Gly	Gly
		35					40					45			
Ser	Gly	Gly	Leu	Ala	Cys	Ala	Lys	Glu	Ala	Ala	Gln	Leu	Gly	Lys	Lys
	50					55					60				
Val	Ala	Val	Ala	Asp	Tyr	Val	Glu	Pro	Ser	Pro	Arg	Gly	Thr	Lys	Trp
65				70						75					80
Gly	Leu	Gly	Gly	Thr	Cys	Val	Asn	Val	Gly	Cys	Ile	Pro	Lys	Lys	Leu
				85					90					95	
Met	His	Gln	Ala	Ala	Leu	Leu	Gly	Gly	Met	Ile	Arg	Asp	Ala	His	His
			100					105					110		
Tyr	Gly	Trp	Glu	Val	Ala	Gln	Pro	Val	Gln	His	Asn	Trp	Lys	Thr	Met
		115					120					125			
Ala	Glu	Ala	Val	Gln	Asn	His	Val	Lys	Ser	Leu	Asn	Trp	Gly	His	Arg
		130				135					140				
Val	Gln	Leu	Gln	Asp	Arg	Lys	Val	Lys	Tyr	Phe	Asn	Ile	Lys	Ala	Ser
145				150						155					160
Phe	Val	Asp	Glu	His	Thr	Val	Arg	Gly	Val	Asp	Lys	Gly	Gly	Lys	Ala
				165				170						175	
Thr	Leu	Leu	Ser	Ala	Glu	His	Ile	Val	Ile	Ala	Thr	Gly	Gly	Arg	Pro
			180					185					190		
Arg	Tyr	Pro	Thr	Gln	Val	Lys	Gly	Ala	Leu	Glu	Tyr	Gly	Ile	Thr	Ser
		195					200					205			
Asp	Asp	Ile	Phe	Trp	Leu	Lys	Glu	Ser	Pro	Gly	Lys	Thr	Leu	Val	Val
	210					215					220				
Gly	Ala	Ser	Tyr	Val	Ala	Leu	Glu	Cys	Ala	Gly	Phe	Leu	Thr	Gly	Ile
225					230					235					240
Gly	Leu	Asp	Thr	Thr	Val	Met	Met	Arg	Ser	Ile	Pro	Leu	Arg	Gly	Phe
				245				250						255	
Asp	Gln	Gln	Met	Ser	Ser	Leu	Val	Thr	Glu	His	Met	Glu	Ser	His	Gly
			260					265					270		
Thr	Gln	Phe	Leu	Lys	Gly	Cys	Val	Pro	Ser	His	Ile	Lys	Lys	Leu	Pro
		275					280					285			
Thr	Asn	Gln	Leu	Gln	Val	Thr	Trp	Glu	Asp	His	Ala	Ser	Gly	Lys	Glu
	290					295					300				
Asp	Thr	Gly	Thr	Phe	Asp	Thr	Val	Leu	Trp	Ala	Ile	Gly	Arg	Val	Pro
305					310					315					320
Glu	Thr	Arg	Thr	Leu	Asn	Leu	Glu	Lys	Ala	Gly	Ile	Ser	Thr	Asn	Pro
				325					330					335	

Lys Asn Gln Lys Ile Ile Val Asp Ala Gln Glu Ala Thr Ser Val Pro  
                   340                  345                  350  
 His Ile Tyr Ala Ile Gly Asp Val Ala Glu Gly Arg Pro Glu Leu Thr  
                   355                  360                  365  
 Pro Thr Ala Ile Lys Ala Gly Lys Leu Leu Ala Gln Arg Leu Phe Gly  
                   370                  375                  380  
 Lys Ser Ser Thr Leu Met Asp Tyr Ser Asn Val Pro Thr Thr Val Phe  
 385                  390                  395                  400  
 Thr Pro Leu Glu Tyr Gly Cys Val Gly Leu Ser Glu Glu Glu Ala Val  
                   405                  410                  415  
 Ala Leu His Gly Gln Glu His Val Glu Val Tyr His Ala Tyr Tyr Lys  
                   420                  425                  430  
 Pro Leu Glu Phe Thr Val Ala Asp Arg Asp Ala Ser Gln Cys Tyr Ile  
                   435                  440                  445  
 Lys Met Val Cys Met Arg Glu Pro Pro Gln Leu Val Leu Gly Leu His  
                   450                  455                  460  
 Phe Leu Gly Pro Asn Ala Gly Glu Val Thr Gln Gly Phe Ala Leu Gly  
 465                  470                  475                  480  
 Ile Lys Cys Gly Ala Ser Tyr Ala Gln Val Met Gln Thr Val Gly Ile  
                   485                  490                  495  
 His Pro Thr Cys Ser Glu Glu Val Val Lys Leu His Ile Ser Lys Arg  
                   500                  505                  510  
 Ser Gly Leu Glu Pro Thr Val Thr Gly Cys Xaa Gly  
                   515                  520

<210> 304  
 <211> 528  
 <212> PRT  
 <213> Mus musculus

<220>  
 <221> VARIANT  
 <222> 527  
 <223> Xaa = Any Amino Acid

<400> 304  
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 Ser Arg Arg Phe Arg Pro Arg Thr Arg Ala Leu Thr Arg Gly Thr Arg  
                   20                  25                  30  
 Gly Ala Ala Ser Ala Ala Gly Gly Gln Gln Ser Phe Asp Leu Leu Val  
                   35                  40                  45  
 Ile Gly Gly Gly Ser Gly Gly Leu Ala Cys Ala Lys Glu Ala Ala Gln  
   50                  55                  60  
 Leu Gly Lys Lys Val Ala Val Ala Asp Tyr Val Glu Pro Ser Pro Arg  
 65                  70                  75                  80  
 Gly Thr Lys Trp Gly Leu Gly Gly Thr Cys Val Asn Val Gly Cys Ile  
                   85                  90                  95  
 Pro Lys Lys Leu Met His Gln Ala Ala Leu Leu Gly Gly Met Ile Arg  
                   100                  105                  110  
 Asp Ala His His Tyr Gly Trp Glu Val Ala Gln Pro Val Gln His Asn  
                   115                  120                  125  
 Trp Lys Thr Met Ala Glu Ala Val Gln Asn His Val Lys Ser Leu Asn  
   130                  135                  140  
 Trp Gly His Arg Val Gln Leu Gln Asp Arg Lys Val Lys Tyr Phe Asn  
 145                  150                  155                  160  
 Ile Lys Ala Ser Phe Val Asp Glu His Thr Val Arg Gly Val Asp Lys  
                   165                  170                  175  
 Gly Gly Lys Ala Thr Leu Leu Ser Ala Glu His Ile Val Ile Ala Thr  
                   180                  185                  190  
 Gly Gly Arg Pro Arg Tyr Pro Thr Gln Val Lys Gly Ala Leu Glu Tyr  
                   195                  200                  205  
 Gly Ile Thr Ser Asp Asp Ile Phe Trp Leu Lys Glu Ser Pro Gly Lys  
   210                  215                  220  
 Thr Leu Val Val Gly Ala Ser Tyr Val Ala Leu Glu Cys Ala Gly Phe  
 225                  230                  235                  240

Leu	Thr	Gly	Ile	Gly	Leu	Asp	Thr	Thr	Val	Met	Met	Arg	Ser	Ile	Pro
			245						250					255	
Leu	Arg	Gly	Phe	Asp	Gln	Gln	Met	Ser	Ser	Leu	Val	Thr	Glu	His	Met
		260						265					270		
Glu	Ser	His	Gly	Thr	Gln	Phe	Leu	Lys	Gly	Cys	Val	Pro	Ser	His	Ile
		275					280					285			
Lys	Lys	Leu	Pro	Thr	Asn	Gln	Leu	Gln	Val	Thr	Trp	Glu	Asp	His	Ala
	290				295						300				
Ser	Gly	Lys	Glu	Asp	Thr	Gly	Thr	Phe	Asp	Thr	Val	Leu	Trp	Ala	Ile
305				310					315					320	
Gly	Arg	Val	Pro	Glu	Thr	Arg	Thr	Leu	Asn	Leu	Glu	Lys	Ala	Gly	Ile
			325					330						335	
Ser	Thr	Asn	Pro	Lys	Asn	Gln	Lys	Ile	Ile	Val	Asp	Ala	Gln	Glu	Ala
		340						345					350		
Thr	Ser	Val	Pro	His	Ile	Tyr	Ala	Ile	Gly	Asp	Val	Ala	Glu	Gly	Arg
		355					360					365			
Pro	Glu	Leu	Thr	Pro	Thr	Ala	Ile	Lys	Ala	Gly	Lys	Leu	Leu	Ala	Gln
	370				375						380				
Arg	Leu	Phe	Gly	Lys	Ser	Ser	Thr	Leu	Met	Asp	Tyr	Ser	Asn	Val	Pro
385				390						395				400	
Thr	Thr	Val	Phe	Thr	Pro	Leu	Glu	Tyr	Gly	Cys	Val	Gly	Leu	Ser	Glu
			405					410					415		
Glu	Glu	Ala	Val	Ala	Leu	His	Gly	Gln	Glu	His	Val	Glu	Val	Tyr	His
		420						425					430		
Ala	Tyr	Tyr	Lys	Pro	Leu	Glu	Phe	Thr	Val	Ala	Asp	Arg	Asp	Ala	Ser
		435					440					445			
Gln	Cys	Tyr	Ile	Lys	Met	Val	Cys	Met	Arg	Glu	Pro	Pro	Gln	Leu	Val
	450				455					460					
Leu	Gly	Leu	His	Phe	Leu	Gly	Pro	Asn	Ala	Gly	Glu	Val	Thr	Gln	Gly
465				470					475					480	
Phe	Ala	Leu	Gly	Ile	Lys	Cys	Gly	Ala	Ser	Tyr	Ala	Gln	Val	Met	Gln
			485					490						495	
Thr	Val	Gly	Ile	His	Pro	Thr	Cys	Ser	Glu	Glu	Val	Val	Lys	Leu	His
		500					505						510		
Ile	Ser	Lys	Arg	Ser	Gly	Leu	Glu	Pro	Thr	Val	Thr	Gly	Cys	Xaa	Gly
		515				520						525			

<210> 305

<211> 520

<212> PRT

<213> Mus musculus

<400> 305

Met	Val	Ala	Ala	Leu	Arg	Gly	Pro	Ser	Arg	Arg	Phe	Arg	Pro	Arg	Thr
1				5					10					15	
Arg	Ala	Leu	Thr	Arg	Gly	Thr	Arg	Gly	Ala	Ala	Ser	Ala	Ala	Gly	Gly
			20					25					30		
Gln	Gln	Ser	Phe	Asp	Leu	Leu	Val	Ile	Gly	Gly	Gly	Ser	Gly	Gly	Leu
		35				40						45			
Ala	Cys	Ala	Lys	Glu	Ala	Ala	Gln	Leu	Gly	Lys	Lys	Val	Ala	Val	Ala
	50				55					60					
Asp	Tyr	Val	Glu	Pro	Ser	Pro	Arg	Gly	Thr	Lys	Trp	Gly	Leu	Gly	Gly
65				70					75					80	
Thr	Cys	Val	Asn	Val	Gly	Cys	Ile	Pro	Lys	Lys	Leu	Met	His	Gln	Ala
			85					90					95		
Ala	Leu	Leu	Gly	Gly	Met	Ile	Arg	Asp	Ala	His	His	Tyr	Gly	Trp	Glu
			100				105						110		
Val	Ala	Gln	Pro	Val	Gln	His	Asn	Trp	Lys	Thr	Met	Ala	Glu	Ala	Val
		115					120					125			
Gln	Asn	His	Val	Lys	Ser	Leu	Asn	Trp	Gly	His	Arg	Val	Gln	Leu	Gln
	130					135					140				
Asp	Arg	Lys	Val	Lys	Tyr	Phe	Asn	Ile	Lys	Ala	Ser	Phe	Val	Asp	Glu
145				150					155					160	
His	Thr	Val	Arg	Gly	Val	Asp	Lys	Gly	Gly	Lys	Ala	Thr	Leu	Leu	Ser
			165				170						175		
Ala	Glu	His	Ile	Val	Ile	Ala	Thr	Gly	Gly	Arg	Pro	Arg	Tyr	Pro	Thr

Gln	Val	Lys	Gly	Ala	Leu	Glu	Tyr	Gly	Ile	Thr	Ser	Asp	Asp	Ile	Phe
		195					200					205			
Trp	Leu	Lys	Glu	Ser	Pro	Gly	Lys	Thr	Leu	Val	Val	Gly	Ala	Ser	Tyr
	210					215					220				
Val	Ala	Leu	Glu	Cys	Ala	Gly	Phe	Leu	Thr	Gly	Ile	Gly	Leu	Asp	Thr
	225				230					235					240
Thr	Val	Met	Met	Arg	Ser	Ile	Pro	Leu	Arg	Gly	Phe	Asp	Gln	Gln	Met
				245					250					255	
Ser	Ser	Leu	Val	Thr	Glu	His	Met	Glu	Ser	His	Gly	Thr	Gln	Phe	Leu
			260					265					270		
Lys	Gly	Cys	Val	Pro	Ser	His	Ile	Lys	Lys	Leu	Pro	Thr	Asn	Gln	Leu
		275					280					285			
Gln	Val	Thr	Trp	Glu	Asp	His	Ala	Ser	Gly	Lys	Glu	Asp	Thr	Gly	Thr
	290					295					300				
Phe	Asp	Thr	Val	Leu	Trp	Ala	Ile	Gly	Arg	Val	Pro	Glu	Thr	Arg	Thr
	305				310					315					320
Leu	Asn	Leu	Glu	Lys	Ala	Gly	Ile	Ser	Thr	Asn	Pro	Lys	Asn	Gln	Lys
				325					330					335	
Ile	Ile	Val	Asp	Ala	Gln	Glu	Ala	Thr	Ser	Val	Pro	His	Ile	Tyr	Ala
			340					345					350		
Ile	Gly	Asp	Val	Ala	Glu	Gly	Arg	Pro	Glu	Leu	Thr	Pro	Thr	Ala	Ile
		355					360					365			
Lys	Ala	Gly	Lys	Leu	Leu	Ala	Gln	Arg	Leu	Phe	Gly	Lys	Ser	Ser	Thr
	370					375					380				
Leu	Met	Asp	Tyr	Ser	Asn	Val	Pro	Thr	Thr	Val	Phe	Thr	Pro	Leu	Glu
	385				390					395					400
Tyr	Gly	Cys	Val	Gly	Leu	Ser	Glu	Glu	Glu	Ala	Val	Ala	Leu	His	Gly
				405					410					415	
Gln	Glu	His	Val	Glu	Val	Tyr	His	Ala	Tyr	Tyr	Lys	Pro	Leu	Glu	Phe
			420					425					430		
Thr	Val	Ala	Asp	Arg	Asp	Ala	Ser	Gln	Cys	Tyr	Ile	Lys	Met	Val	Cys
		435					440					445			
Met	Arg	Glu	Pro	Pro	Gln	Leu	Val	Leu	Gly	Leu	His	Phe	Leu	Gly	Pro
	450					455					460				
Asn	Ala	Gly	Glu	Val	Thr	Gln	Gly	Phe	Ala	Leu	Gly	Ile	Lys	Cys	Gly
	465				470					475					480
Ala	Ser	Tyr	Ala	Gln	Val	Met	Gln	Thr	Val	Gly	Ile	His	Pro	Thr	Cys
				485					490					495	
Ser	Glu	Glu	Val	Val	Lys	Leu	His	Ile	Ser	Lys	Arg	Ser	Gly	Leu	Glu
			500					505					510		
Pro	Thr	Val	Thr	Gly	Cys	Cys	Gly								
		515					520								

<210> 306  
 <211> 499  
 <212> PRT  
 <213> Mus musculus

<400> 306

Met	Asn	Gly	Ser	Lys	Asp	Pro	Pro	Gly	Ser	Tyr	Asp	Phe	Asp	Leu	Ile
1				5					10					15	
Ile	Ile	Gly	Gly	Ser	Gly	Gly	Leu	Ala	Ala	Ala	Lys	Glu	Ala	Ala	
			20				25					30			
Lys	Phe	Asp	Lys	Lys	Val	Leu	Val	Leu	Asp	Phe	Val	Thr	Pro	Thr	Pro
		35					40				45				
Leu	Gly	Thr	Arg	Trp	Gly	Leu	Gly	Gly	Thr	Cys	Val	Asn	Val	Gly	Cys
	50					55				60					
Ile	Pro	Lys	Lys	Leu	Met	His	Gln	Ala	Ala	Leu	Leu	Gly	Gln	Ala	Leu
	65				70					75					80
Lys	Asp	Ser	Arg	Asn	Tyr	Gly	Trp	Lys	Val	Glu	Asp	Thr	Val	Lys	His
			85					90						95	
Asp	Trp	Glu	Lys	Met	Thr	Glu	Ser	Val	Gln	Ser	His	Ile	Gly	Ser	Leu
		100						105					110		
Asn	Trp	Gly	Tyr	Arg	Val	Ala	Leu	Arg	Glu	Lys	Lys	Val	Val	Tyr	Glu
		115					120						125		

Asn	Ala	Tyr	Gly	Arg	Phe	Ile	Gly	Pro	His	Arg	Ile	Val	Ala	Thr	Asn
130						135					140				
Asn	Lys	Gly	Lys	Glu	Lys	Ile	Tyr	Ser	Ala	Glu	Arg	Phe	Leu	Ile	Ala
145					150					155					160
Thr	Gly	Glu	Arg	Pro	Arg	Tyr	Leu	Gly	Ile	Pro	Gly	Asp	Lys	Glu	Tyr
				165					170					175	
Cys	Ile	Ser	Ser	Asp	Asp	Leu	Phe	Ser	Leu	Pro	Tyr	Cys	Pro	Gly	Lys
			180					185					190		
Thr	Leu	Val	Val	Gly	Ala	Ser	Tyr	Val	Ala	Leu	Glu	Cys	Ala	Gly	Phe
		195					200					205			
Leu	Ala	Gly	Ile	Gly	Leu	Asp	Val	Thr	Val	Met	Val	Arg	Ser	Ile	Leu
	210					215					220				
Leu	Arg	Gly	Phe	Asp	Gln	Asp	Met	Ala	Asn	Lys	Ile	Gly	Glu	His	Met
225					230					235					240
Glu	Glu	His	Gly	Ile	Lys	Phe	Ile	Arg	Gln	Phe	Val	Pro	Thr	Lys	Ile
				245					250					255	
Glu	Gln	Ile	Glu	Ala	Gly	Thr	Pro	Gly	Arg	Leu	Arg	Val	Thr	Ala	Gln
			260					265					270		
Ser	Thr	Asn	Ser	Glu	Glu	Thr	Ile	Glu	Gly	Glu	Phe	Asn	Thr	Val	Leu
		275					280					285			
Leu	Ala	Val	Gly	Arg	Asp	Ser	Cys	Thr	Arg	Thr	Ile	Gly	Leu	Glu	Thr
	290					295					300				
Val	Gly	Val	Lys	Ile	Asn	Glu	Lys	Thr	Gly	Lys	Ile	Pro	Val	Thr	Asp
305					310					315					320
Glu	Glu	Gln	Thr	Asn	Val	Pro	Tyr	Ile	Tyr	Ala	Ile	Gly	Asp	Ile	Leu
				325					330					335	
Glu	Gly	Lys	Leu	Glu	Leu	Thr	Pro	Val	Ala	Ile	Gln	Ala	Gly	Arg	Leu
			340					345					350		
Leu	Ala	Gln	Arg	Leu	Tyr	Gly	Gly	Ser	Asn	Val	Lys	Cys	Asp	Tyr	Asp
		355					360					365			
Asn	Val	Pro	Thr	Thr	Val	Phe	Thr	Pro	Leu	Glu	Tyr	Gly	Cys	Cys	Gly
	370					375					380				
Leu	Ser	Glu	Glu	Lys	Ala	Val	Glu	Lys	Phe	Gly	Glu	Glu	Asn	Ile	Glu
385					390					395					400
Val	Tyr	His	Ser	Phe	Phe	Trp	Pro	Leu	Glu	Trp	Thr	Val	Pro	Ser	Arg
				405					410					415	
Asp	Asn	Asn	Lys	Cys	Tyr	Ala	Lys	Ile	Ile	Cys	Asn	Leu	Lys	Asp	Asp
			420					425					430		
Glu	Arg	Val	Val	Gly	Phe	His	Val	Leu	Gly	Pro	Asn	Ala	Gly	Glu	Val
		435					440					445			
Thr	Gln	Gly	Phe	Ala	Ala	Ala	Leu	Lys	Cys	Gly	Leu	Thr	Lys	Gln	Gln
	450					455					460				
Leu	Asp	Ser	Thr	Ile	Gly	Ile	His	Pro	Val	Cys	Ala	Glu	Ile	Phe	Thr
465					470					475					480
Thr	Leu	Ser	Val	Thr	Lys	Arg	Ser	Gly	Gly	Asp	Ile	Leu	Gln	Ser	Gly
				485					490					495	
Cys	Cys	Gly													

<210> 307  
 <211> 497  
 <212> PRT  
 <213> Rattus norvegicus

<220>  
 <221> VARIANT  
 <222> 497  
 <223> Xaa = Any Amino Acid

<400> 307  
 Met Asn Asp Ser Lys Asp Ala Pro Lys Ser Tyr Asp Phe Asp Leu Ile  
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 Ile Ile Gly Gly Ser Gly Gly Leu Ala Ala Ala Lys Glu Ala Ala  
 20 25 30  
 Lys Phe Asp Lys Lys Val Met Val Leu Asp Phe Val Thr Pro Thr Pro  
 35 40 45

Leu	Gly	Thr	Asn	Gly	Gly	Leu	Gly	Gly	Thr	Cys	Val	Asn	Val	Gly	Cys
50						55					60				
Ile	Pro	Lys	Lys	Leu	Met	His	Gln	Ala	Ala	Leu	Leu	Gly	Gln	Ala	Leu
65				70						75					80
Lys	Asp	Ser	Arg	Asn	Tyr	Gly	Trp	Lys	Leu	Glu	Asp	Thr	Val	Lys	His
				85					90					95	
Asp	Trp	Glu	Lys	Met	Thr	Glu	Ser	Val	Gln	Asn	His	Ile	Gly	Ser	Leu
			100					105					110		
Asn	Trp	Gly	Tyr	Arg	Val	Ala	Leu	Arg	Glu	Lys	Lys	Val	Val	Tyr	Glu
		115					120					125			
Asn	Ala	Tyr	Gly	Lys	Phe	Ile	Gly	Pro	His	Lys	Ile	Met	Ala	Thr	Asn
		130				135					140				
Asn	Lys	Gly	Lys	Glu	Lys	Val	Tyr	Ser	Ala	Glu	Arg	Phe	Leu	Ile	Ala
145				150						155					160
Thr	Gly	Glu	Arg	Pro	Arg	Tyr	Leu	Gly	Ile	Pro	Gly	Asp	Lys	Glu	Tyr
				165				170						175	
Cys	Ile	Ser	Ser	Asp	Asp	Leu	Phe	Ser	Leu	Pro	Tyr	Cys	Pro	Gly	Lys
			180					185					190		
Thr	Leu	Val	Val	Gly	Ala	Ser	Tyr	Val	Ala	Leu	Glu	Cys	Ala	Gly	Phe
		195					200					205			
Leu	Ala	Gly	Ile	Gly	Leu	Asp	Val	Thr	Val	Met	Val	Arg	Ser	Ile	Leu
		210				215					220				
Leu	Arg	Gly	Phe	Asp	Gln	Asp	Met	Ala	Asn	Lys	Ile	Gly	Glu	His	Met
225				230						235					240
Glu	Glu	His	Gly	Ile	Lys	Phe	Ile	Arg	Gln	Phe	Val	Pro	Thr	Lys	Ile
			245						250					255	
Glu	Gln	Ile	Glu	Ala	Gly	Thr	Pro	Gly	Arg	Leu	Lys	Val	Thr	Ala	Lys
			260					265						270	
Ser	Thr	Asn	Ser	Glu	Glu	Thr	Ile	Glu	Asp	Glu	Phe	Asn	Thr	Val	Leu
		275					280					285			
Leu	Ala	Val	Gly	Arg	Asp	Ser	Cys	Thr	Arg	Thr	Ile	Gly	Leu	Glu	Thr
		290				295					300				
Val	Gly	Val	Lys	Ile	Asn	Glu	Lys	Thr	Gly	Lys	Ile	Pro	Val	Thr	Asp
305				310						315					320
Glu	Glu	Gln	Thr	Asn	Val	Pro	Tyr	Ile	Tyr	Ala	Ile	Gly	Asp	Ile	Leu
			325						330					335	
Glu	Gly	Lys	Leu	Glu	Leu	Thr	Pro	Val	Ala	Ile	Gln	Ala	Gly	Arg	Leu
			340					345					350		
Leu	Ala	Gln	Arg	Leu	Tyr	Gly	Gly	Ser	Thr	Val	Lys	Cys	Asp	Tyr	Asp
		355					360					365			
Asn	Val	Pro	Thr	Thr	Val	Phe	Thr	Pro	Leu	Glu	Tyr	Gly	Cys	Cys	Gly
		370				375					380				
Leu	Ser	Glu	Glu	Lys	Ala	Val	Glu	Lys	Phe	Gly	Glu	Glu	Asn	Ile	Glu
385				390						395					400
Val	Tyr	His	Ser	Phe	Phe	Trp	Pro	Leu	Glu	Trp	Thr	Val	Pro	Ser	Arg
			405						410					415	
Asp	Asn	Asn	Lys	Cys	Tyr	Ala	Lys	Val	Ile	Cys	Asn	Leu	Lys	Asp	Asn
			420					425					430		
Glu	Arg	Val	Val	Gly	Phe	His	Val	Leu	Gly	Pro	Asn	Ala	Gly	Glu	Val
		435					440					445			
Thr	Gln	Gly	Phe	Ala	Ala	Ala	Leu	Lys	Cys	Gly	Leu	Thr	Lys	Gln	Gln
		450				455					460				
Leu	Asp	Ser	Thr	Ile	Gly	Ile	His	Pro	Val	Cys	Ala	Glu	Ile	Phe	Thr
465				470						475					480
Thr	Leu	Ser	Val	Thr	Lys	Arg	Ser	Gly	Gly	Asp	Ile	Leu	Gln	Ser	Gly
			485						490					495	

Xaa

<210> 308  
 <211> 176  
 <212> PRT  
 <213> Rattus norvegicus

<400> 308  
 Arg Ile His Ala Gly Gly Ala Gly Arg Arg Arg Gly Gly Ala Arg Arg



1	Ala	Gly	Val	Phe	Ile	Leu	Leu	Ala	His	Pro	Asn	Lys	Lys	Gly	Leu	Leu
			20						25					30		
Arg	Lys	Leu	Ser	Thr	Met	Asn	Asp	Ser	Lys	Asp	Ala	Pro	Lys	Ser	Tyr	
		35					40					45				
Asp	Phe	Asp	Leu	Ile	Ile	Ile	Gly	Gly	Gly	Ser	Gly	Gly	Leu	Ala	Ala	
	50					55					60					
Ala	Lys	Glu	Ala	Ala	Lys	Phe	Asp	Lys	Lys	Val	Met	Val	Leu	Asp	Phe	
65					70					75					80	
Val	Thr	Pro	Thr	Pro	Leu	Gly	Thr	Arg	Trp	Gly	Leu	Gly	Gly	Thr	Cys	
			85						90					95		
Val	Asn	Val	Gly	Cys	Ile	Pro	Lys	Lys	Leu	Met	His	Gln	Ala	Ala	Leu	
			100					105					110			
Leu	Gly	Gln	Ala	Leu	Lys	Asp	Ser	Arg	Asn	Tyr	Gly	Trp	Lys	Leu	Glu	
		115					120					125				
Asp	Thr	Val	Lys	His	Asp	Trp	Glu	Lys	Met	Thr	Glu	Ser	Val	Gln	Asn	
	130					135					140					
His	Ile	Gly	Ser	Leu	Asn	Trp	Gly	Tyr	Arg	Val	Ala	Leu	Arg	Glu	Lys	
145					150					155					160	
Lys	Val	Val	Tyr	Glu	Asn	Ala	Tyr	Gly	Lys	Phe	Ile	Gly	Pro	His	Lys	
				165					170					175		

<210> 309  
 <211> 498  
 <212> PRT  
 <213> Rattus norvegicus

<220>  
 <221> VARIANT  
 <222> 497  
 <223> Xaa = Any Amino Acid

<400> 309	Met	Asn	Asp	Ser	Lys	Asp	Ala	Pro	Lys	Ser	Tyr	Asp	Phe	Asp	Leu	Ile
	1				5					10					15	
Ile	Ile	Gly	Gly	Gly	Ser	Gly	Gly	Leu	Ala	Ala	Ala	Lys	Glu	Ala	Ala	
		20						25					30			
Lys	Phe	Asp	Lys	Lys	Val	Met	Val	Leu	Asp	Phe	Val	Thr	Pro	Thr	Pro	
	35						40				45					
Leu	Gly	Thr	Asn	Gly	Gly	Leu	Gly	Gly	Thr	Cys	Val	Asn	Val	Gly	Cys	
	50					55				60						
Ile	Pro	Lys	Lys	Leu	Met	His	Gln	Ala	Ala	Leu	Gly	Gln	Ala	Leu		
65					70					75				80		
Lys	Asp	Ser	Arg	Asn	Tyr	Gly	Trp	Lys	Leu	Glu	Asp	Thr	Val	Lys	His	
				85				90					95			
Asp	Trp	Glu	Lys	Met	Thr	Glu	Ser	Val	Gln	Asn	His	Ile	Gly	Ser	Leu	
		100					105					110				
Asn	Trp	Gly	Tyr	Arg	Val	Ala	Leu	Arg	Glu	Lys	Lys	Val	Val	Tyr	Glu	
		115					120					125				
Asn	Ala	Tyr	Gly	Lys	Phe	Ile	Gly	Pro	His	Lys	Ile	Met	Ala	Thr	Asn	
	130					135					140					
Asn	Lys	Gly	Lys	Glu	Lys	Val	Tyr	Ser	Ala	Glu	Arg	Phe	Leu	Ile	Ala	
145					150					155					160	
Thr	Gly	Glu	Arg	Pro	Arg	Tyr	Leu	Gly	Ile	Pro	Gly	Asp	Lys	Glu	Tyr	
				165				170						175		
Cys	Ile	Ser	Ser	Asp	Asp	Leu	Phe	Ser	Leu	Pro	Tyr	Cys	Pro	Gly	Lys	
		180						185					190			
Thr	Leu	Val	Val	Gly	Ala	Ser	Tyr	Val	Ala	Leu	Glu	Cys	Ala	Gly	Phe	
		195					200					205				
Leu	Ala	Gly	Ile	Gly	Leu	Asp	Val	Thr	Val	Met	Val	Arg	Ser	Ile	Leu	
	210					215					220					
Leu	Arg	Gly	Phe	Asp	Gln	Asp	Met	Ala	Asn	Lys	Ile	Gly	Glu	His	Met	
225					230					235					240	
Glu	Glu	His	Gly	Ile	Lys	Phe	Ile	Arg	Gln	Phe	Val	Pro	Thr	Lys	Ile	
				245					250					255		
Glu	Gln	Ile	Glu	Ala	Gly	Thr	Pro	Gly	Arg	Leu	Lys	Val	Thr	Ala	Lys	



Asn	Lys	Gly	Lys	Glu	Lys	Val	Tyr	Ser	Ala	Glu	Arg	Phe	Leu	Ile	Ala
145					150					155					160
Thr	Gly	Glu	Arg	Pro	Arg	Tyr	Leu	Gly	Ile	Pro	Gly	Asp	Lys	Glu	Tyr
				165					170						175
Cys	Ile	Ser	Ser	Asp	Asp	Leu	Phe	Ser	Leu	Pro	Tyr	Cys	Pro	Gly	Lys
				180					185						190
Thr	Leu	Val	Val	Gly	Ala	Ser	Tyr	Val	Ala	Leu	Glu	Cys	Ala	Gly	Phe
		195					200					205			
Leu	Ala	Gly	Ile	Gly	Leu	Asp	Val	Thr	Val	Met	Val	Arg	Ser	Ile	Leu
	210					215					220				
Leu	Arg	Gly	Phe	Asp	Gln	Asp	Met	Ala	Asn	Lys	Ile	Gly	Glu	His	Met
	225				230					235					240
Glu	Glu	His	Gly	Ile	Lys	Phe	Ile	Arg	Gln	Phe	Val	Pro	Thr	Lys	Ile
				245					250						255
Glu	Gln	Ile	Glu	Ala	Gly	Thr	Pro	Gly	Arg	Leu	Lys	Val	Thr	Ala	Lys
			260					265							270
Ser	Thr	Asn	Ser	Glu	Glu	Thr	Ile	Glu	Asp	Glu	Phe	Asn	Thr	Val	Leu
		275					280					285			
Leu	Ala	Val	Gly	Arg	Asp	Ser	Cys	Thr	Arg	Thr	Ile	Gly	Leu	Glu	Thr
	290					295					300				
Val	Gly	Val	Lys	Ile	Asn	Glu	Lys	Thr	Gly	Lys	Ile	Pro	Val	Thr	Asp
	305				310					315					320
Glu	Glu	Gln	Thr	Asn	Val	Pro	Tyr	Ile	Tyr	Ala	Ile	Gly	Asp	Ile	Leu
				325					330						335
Glu	Gly	Lys	Leu	Glu	Leu	Thr	Pro	Val	Ala	Ile	Gln	Ala	Gly	Arg	Leu
			340					345							350
Leu	Ala	Gln	Arg	Leu	Tyr	Gly	Gly	Ser	Thr	Val	Lys	Cys	Asp	Tyr	Asp
		355					360					365			
Asn	Val	Pro	Thr	Thr	Val	Phe	Thr	Pro	Leu	Glu	Tyr	Gly	Cys	Cys	Gly
	370					375					380				
Leu	Ser	Glu	Glu	Lys	Ala	Val	Glu	Lys	Phe	Gly	Glu	Glu	Asn	Ile	Glu
	385				390					395					400
Val	Tyr	His	Ser	Phe	Phe	Trp	Pro	Leu	Glu	Trp	Thr	Val	Pro	Ser	Arg
				405					410					415	
Asp	Asn	Asn	Lys	Cys	Tyr	Ala	Lys	Val	Ile	Cys	Asn	Leu	Lys	Asp	Asn
			420					425					430		
Glu	Arg	Val	Val	Gly	Phe	His	Val	Leu	Gly	Pro	Asn	Ala	Gly	Glu	Val
		435					440					445			
Thr	Gln	Ala	Leu	Gln	Pro	Leu	Lys	Cys	Gly	Leu	Thr	Lys	Gln	Gln	Leu
	450					455					460				
Asp	Ser	Thr	Ile	Gly	Ile	His	Pro	Val	Cys	Ala	Glu	Ile	Phe	Thr	Thr
	465				470					475					480
Leu	Ser	Val	Thr	Lys	Arg	Ser	Gly	Gly	Asp	Ile	Leu	Gln	Ser	Gly	Cys
				485					490						495

<210> 312  
 <211> 526  
 <212> PRT  
 <213> Rattus norvegicus

<220>  
 <221> VARIANT  
 <222> 525  
 <223> Xaa = Any Amino Acid

<400> 312  
 Met Ala Ala Ile Val Ala Ala Leu Arg Gly Ser Ser Gly Arg Phe Arg  
 1 5 10 15  
 Pro Gln Thr Arg Val Leu Thr Arg Gly Thr Arg Gly Ala Ala Gly Ala  
 20 25 30  
 Ala Ser Ala Ala Gly Gly Gln Gln Asn Phe Asp Leu Leu Val Ile Gly  
 35 40 45  
 Gly Gly Ser Gly Gly Leu Ala Cys Ala Lys Glu Ala Ala Gln Leu Gly  
 50 55 60  
 Arg Lys Val Ala Val Ala Asp Tyr Val Glu Pro Ser Pro Arg Gly Thr  
 65 70 75 80

Lys	Trp	Gly	Leu	Gly	Gly	Thr	Cys	Val	Asn	Val	Gly	Cys	Ile	Pro	Lys
			85						90					95	
Lys	Leu	Met	His	Gln	Ala	Ala	Leu	Leu	Gly	Gly	Met	Ile	Arg	Asp	Ala
			100					105					110		
Gln	His	Tyr	Gly	Trp	Glu	Val	Ala	Gln	Pro	Val	Gln	His	Asn	Trp	Lys
		115					120					125			
Ala	Met	Ala	Glu	Ala	Val	Gln	Asn	His	Val	Lys	Ser	Leu	Asn	Trp	Gly
	130					135					140				
His	Arg	Val	Gln	Leu	Gln	Asp	Arg	Lys	Val	Lys	Tyr	Phe	Asn	Ile	Lys
145					150					155					160
Ala	Ser	Phe	Val	Asn	Glu	His	Thr	Val	His	Gly	Val	Asp	Lys	Ala	Gly
				165					170					175	
Lys	Val	Thr	Gln	Leu	Ser	Ala	Lys	His	Ile	Val	Ile	Ala	Thr	Gly	Gly
			180					185					190		
Arg	Pro	Lys	Tyr	Pro	Thr	Gln	Val	Lys	Gly	Ala	Leu	Glu	His	Gly	Ile
		195					200					205			
Thr	Ser	Asp	Asp	Ile	Phe	Trp	Leu	Lys	Glu	Ser	Pro	Gly	Lys	Thr	Leu
	210					215					220				
Val	Val	Gly	Ala	Ser	Tyr	Val	Ala	Leu	Glu	Cys	Ala	Gly	Phe	Leu	Thr
225					230					235					240
Gly	Ile	Gly	Leu	Asp	Thr	Thr	Val	Met	Met	Arg	Ser	Val	Pro	Leu	Arg
				245					250					255	
Gly	Phe	Asp	Gln	Gln	Met	Ala	Ser	Leu	Val	Thr	Glu	His	Met	Glu	Ser
			260					265					270		
His	Gly	Thr	Arg	Phe	Leu	Lys	Gly	Cys	Val	Pro	Ser	Leu	Ile	Arg	Lys
		275					280					285			
Leu	Pro	Thr	Asn	Gln	Leu	Gln	Val	Thr	Trp	Glu	Asp	Leu	Ala	Ser	Gly
		290				295					300				
Lys	Glu	Asp	Val	Gly	Thr	Phe	Asp	Thr	Val	Leu	Trp	Ala	Ile	Gly	Arg
305					310					315					320
Val	Pro	Glu	Thr	Arg	Asn	Leu	Asn	Leu	Glu	Lys	Ala	Gly	Val	Asn	Thr
				325					330					335	
Asn	Pro	Lys	Asn	Gln	Lys	Ile	Ile	Val	Asp	Ala	Gln	Glu	Ala	Thr	Ser
			340					345					350		
Val	Pro	His	Ile	Tyr	Ala	Ile	Gly	Asp	Val	Ala	Glu	Gly	Arg	Pro	Glu
		355					360					365			
Leu	Thr	Pro	Thr	Ala	Ile	Lys	Ala	Gly	Lys	Leu	Leu	Ala	Gln	Arg	Leu
	370					375					380				
Phe	Gly	Lys	Ser	Ser	Thr	Leu	Met	Asn	Tyr	Ser	Asn	Val	Pro	Thr	Thr
385					390					395					400
Val	Phe	Thr	Pro	Leu	Glu	Tyr	Gly	Cys	Val	Gly	Leu	Ser	Glu	Glu	Glu
				405					410					415	
Ala	Val	Ala	Leu	His	Gly	Gln	Glu	His	Ile	Glu	Val	Tyr	His	Ala	Tyr
			420					425					430		
Tyr	Lys	Pro	Leu	Glu	Phe	Thr	Val	Ala	Asp	Arg	Asp	Ala	Ser	Gln	Cys
		435					440					445			
Tyr	Ile	Lys	Met	Val	Cys	Met	Arg	Glu	Pro	Pro	Gln	Leu	Val	Leu	Gly
	450					455					460				
Leu	His	Phe	Leu	Gly	Pro	Asn	Ala	Gly	Glu	Val	Thr	Gln	Gly	Phe	Ala
465					470					475					480
Leu	Gly	Ile	Gln	Cys	Gly	Ala	Ser	Tyr	Ala	Gln	Val	Met	Gln	Thr	Val
				485					490					495	
Gly	Ile	His	Pro	Thr	Cys	Ser	Glu	Glu	Val	Val	Lys	Leu	His	Ile	Ser
			500					505					510		
Lys	Arg	Ser	Gly	Leu	Asp	Pro	Thr	Val	Thr	Gly	Cys	Xaa	Gly		
		515					520					525			

<210> 313  
 <211> 499  
 <212> PRT  
 <213> Sus Scrofa

<220>  
 <221> VARIANT  
 <222> 498  
 <223> Xaa = Any Amino Acid

<400> 313

Met	Asn	Gly	Ala	Glu	Glu	Leu	Pro	Glu	Met	Tyr	Asp	Tyr	Asp	Leu	Ile
1				5					10					15	
Ile	Ile	Gly	Gly	Gly	Ser	Gly	Gly	Leu	Ala	Ala	Ala	Lys	Glu	Ala	Ala
		20						25					30		
Arg	Phe	Asn	Lys	Arg	Val	Met	Val	Leu	Asp	Phe	Val	Thr	Pro	Thr	Pro
		35					40					45			
Leu	Gly	Thr	Arg	Trp	Gly	Leu	Gly	Gly	Thr	Cys	Val	Asn	Val	Ser	Cys
	50					55					60				
Ile	Pro	Lys	Lys	Leu	Met	His	Gln	Ala	Ala	Leu	Gly	Gln	Ala	Leu	
65					70					75				80	
Arg	Asp	Ser	Arg	Asn	Tyr	Gly	Trp	Asn	Val	Glu	Glu	Thr	Ile	Lys	His
				85					90					95	
Asp	Trp	Glu	Arg	Met	Thr	Glu	Ala	Val	Gln	Asn	His	Ile	Gly	Ser	Leu
		100						105					110		
Asn	Trp	Gly	Tyr	Arg	Val	Ala	Leu	Arg	Glu	Lys	Lys	Val	Thr	Tyr	Glu
		115					120					125			
Asn	Ala	Tyr	Gly	Gln	Phe	Val	Gly	Pro	His	Arg	Ile	Lys	Ala	Thr	Asn
	130					135					140				
Asn	Lys	Gly	Lys	Glu	Lys	Ile	Tyr	Ser	Ala	Glu	Lys	Phe	Leu	Ile	Ala
145					150					155				160	
Thr	Gly	Glu	Arg	Pro	Arg	Tyr	Leu	Gly	Ile	Pro	Gly	Asp	Lys	Glu	Tyr
				165					170					175	
Cys	Ile	Ser	Ser	Asp	Asp	Leu	Phe	Ser	Leu	Pro	Tyr	Cys	Pro	Gly	Lys
			180					185					190		
Thr	Leu	Val	Val	Gly	Ala	Ser	Tyr	Val	Ala	Leu	Glu	Cys	Ala	Gly	Phe
		195					200					205			
Leu	Ala	Gly	Ile	Gly	Leu	Asp	Val	Thr	Val	Met	Val	Arg	Ser	Ile	Leu
	210					215					220				
Leu	Arg	Gly	Phe	Asp	Gln	Asp	Met	Ala	Asn	Lys	Ile	Gly	Glu	His	Met
225					230					235				240	
Glu	Glu	His	Gly	Ile	Lys	Phe	Ile	Arg	Gln	Phe	Val	Pro	Ile	Lys	Val
				245					250					255	
Glu	Gln	Ile	Glu	Ala	Gly	Thr	Pro	Gly	Arg	Leu	Arg	Val	Val	Ala	Gln
			260					265					270		
Ser	Thr	Asn	Ser	Glu	Glu	Ile	Ile	Glu	Gly	Glu	Tyr	Asn	Thr	Val	Met
		275					280					285			
Leu	Ala	Ile	Gly	Arg	Asp	Ala	Cys	Thr	Arg	Lys	Ile	Gly	Leu	Glu	Thr
	290					295					300				
Val	Gly	Val	Lys	Ile	Asn	Glu	Lys	Thr	Gly	Lys	Ile	Pro	Val	Thr	Asp
305					310					315				320	
Glu	Glu	Gln	Thr	Asn	Val	Pro	Tyr	Ile	Tyr	Ala	Ile	Gly	Asp	Ile	Leu
				325					330					335	
Glu	Asp	Lys	Val	Glu	Leu	Thr	Pro	Val	Ala	Ile	Gln	Ala	Gly	Arg	Leu
			340					345					350		
Leu	Ala	Gln	Arg	Leu	Tyr	Ala	Gly	Ser	Thr	Val	Lys	Cys	Asp	Tyr	Glu
	355						360					365			
Asn	Val	Pro	Thr	Thr	Val	Phe	Thr	Pro	Leu	Glu	Tyr	Gly	Ala	Cys	Gly
	370					375					380				
Leu	Ser	Glu	Glu	Lys	Ala	Val	Glu	Lys	Phe	Gly	Glu	Glu	Asn	Ile	Glu
385					390					395				400	
Val	Tyr	His	Ser	Tyr	Phe	Trp	Pro	Leu	Glu	Trp	Thr	Ile	Pro	Ser	Arg
				405					410					415	
Asp	Asn	Asn	Lys	Cys	Tyr	Ala	Lys	Ile	Ile	Cys	Asn	Thr	Lys	Asp	Asn
			420					425					430		
Glu	Arg	Val	Val	Gly	Phe	His	Val	Leu	Gly	Pro	Asn	Ala	Gly	Glu	Val
		435					440					445			
Thr	Gln	Gly	Phe	Ala	Ala	Ala	Leu	Lys	Cys	Gly	Leu	Thr	Lys	Lys	Gln
	450					455					460				
Leu	Asp	Ser	Thr	Ile	Gly	Ile	His	Pro	Val	Cys	Ala	Glu	Val	Phe	Thr
465					470					475				480	
Thr	Leu	Ser	Val	Thr	Lys	Arg	Ser	Gly	Ala	Ser	Ile	Leu	Gln	Ala	Gly
				485					490					495	
Cys	Xaa	Gly													